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PRODUCING REFINING PIPELINE ENGINEERING MARKETING

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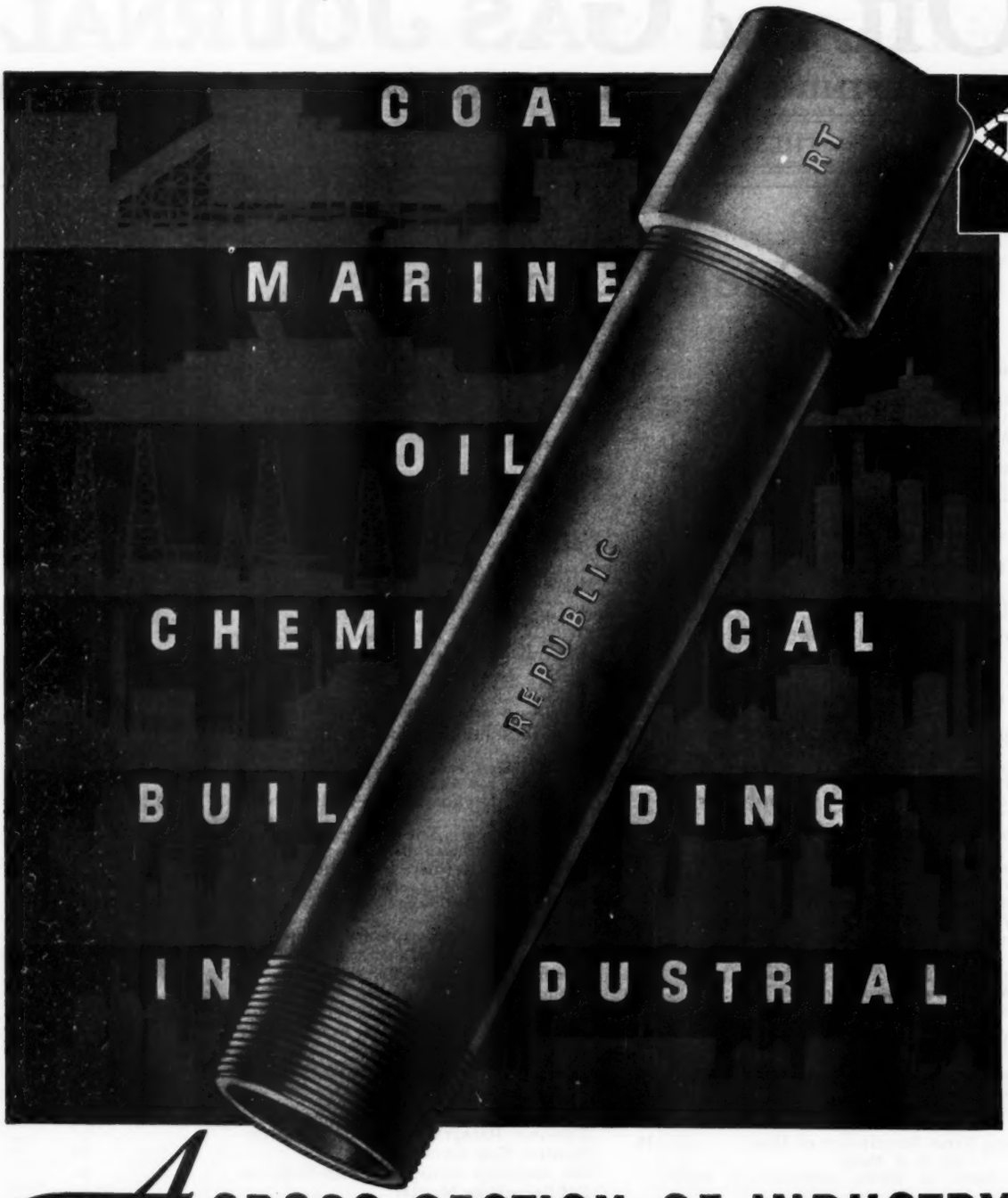


A CROSS SECTION OF INDUSTRY SHOWS

. . . that the acceptance of Toncan Iron Pipe extends into practically every field where pipe is used. Evidence of the esteem in which this longer-lasting alloy of refined iron, copper and molybdenum is held, and of the variety of its application, is found in these facts. Several hundred tons of Toncan Iron Pipe went into the new S.S. Manhattan, largest American-built boat. Any number of railroads are using it in boiler tubes. In the chemical field, Sharples Solvents Company found that it overcame many corrosion troubles. In the petroleum industry, Empire Refining Company uses it extensively. In the anthracite district, Pittston Company has found it the most economical pipe they have used. Hannaford & Son, well known architects of Cincinnati, have used it for the new Times-Star Building. Western Electric employs it to handle sea water condensate.

These are just a few—"Pipe for Permanence" lists hundreds of applications where this rust and corrosion-resisting pipe is in daily use. You'll want a copy for your file. Just ask, and it will be mailed.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

Crude and Refined Situation Stronger

Highest production in 1931, week ending Aug. 8, average daily output 2,551,807 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

Recent Gains Being Consolidated on Firm Basis. Continued Curtailment Will Bring Further Increases

By Andrew M. Rowley

Lowest daily average crude oil production in the United States during 1931 was for week ending Sept. 5, with average output of 1,736,007 bbls.

Further strengthening of the crude and refined oil markets at the higher price levels has been effected by holding available supplies within requirements. Refiners, realizing that a runaway market at this time might very easily result in lower prices later with a loss of gains already achieved, have adopted the policy of discouraging additional increases in refined oil prices now. The crude oil production situation is in splendid shape which would be reflected in substantial withdrawals from storage had not imports shown such a large increase.

Settlement of the tax situation at Washington will go a long way towards clearing the atmosphere both in the crude and refined oil markets. The industry in the United States has put its house in order although there is a slight disorder in one room, California. The Sharkey Conservation Bill comes before the electors of that state for decision on May 3. Its passage would aid materially in stabilizing conditions on the Pacific Coast.

Domestic crude oil production continues well below requirements and is being held at a fairly steady level without any indications of large increases expected from any area. The demand is increasing, good motoring weather stimulating consumption of gasoline.

The petroleum industry is entering its main consuming season in the best shape in years. Curtailment of production of crude oil and in the manufacture of gasoline will insure a further strengthening of the situation which cannot help but be reflected in additional increases in prices when present gains have been thoroughly consolidated.

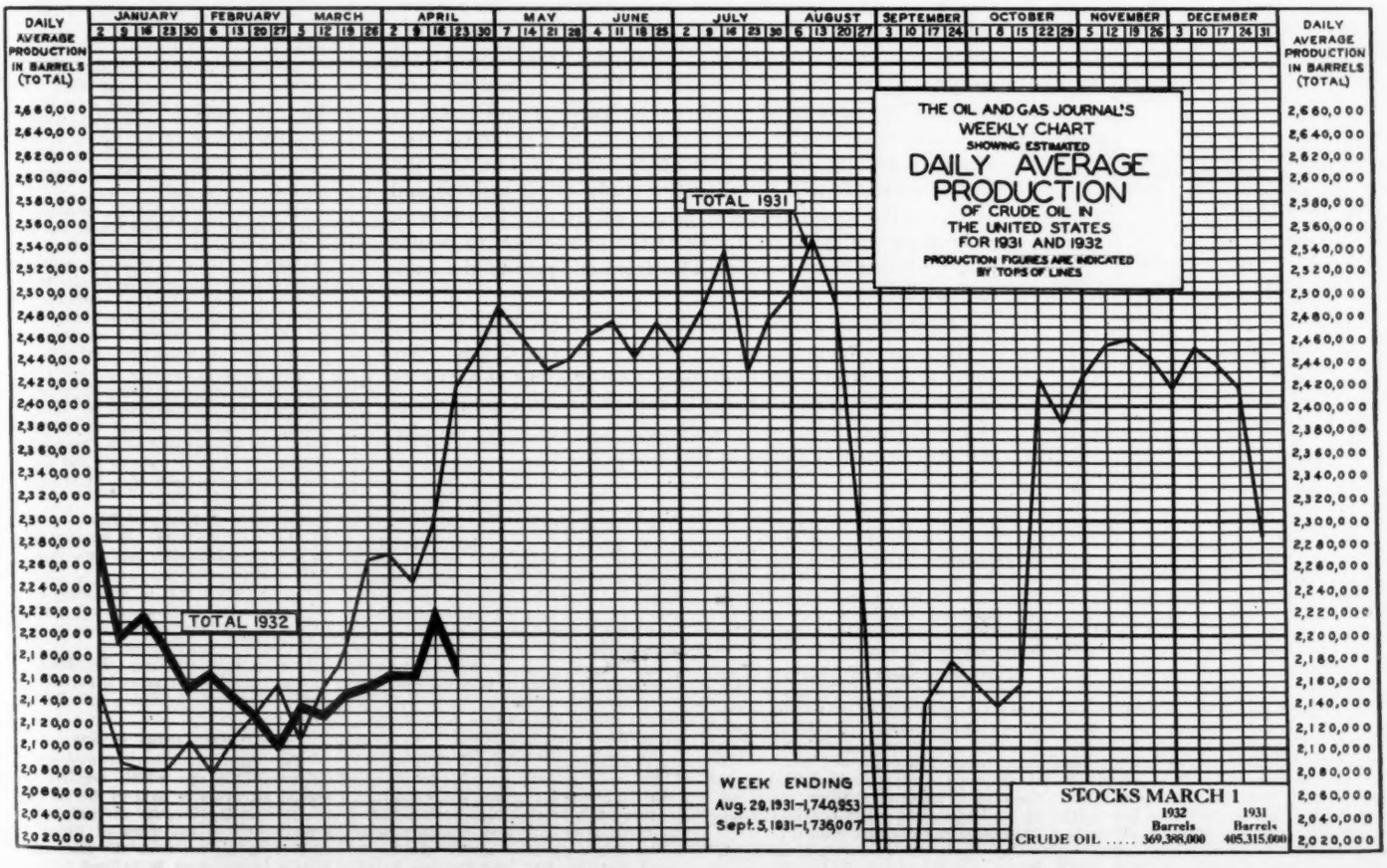
A long step has been taken towards placing the entire business on a better price level and the policy of moving slowly at this time is absolutely sound. A period of substantial withdrawals from storage will help all branches of the business and will insure for a longer time better prices which are bound to follow. A continuance of the present situation certainly will warrant and justify higher prices, both for crude and refined oils, within the near future.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for the week ending April 16, and a comparison with the previous week follows:

	April 16	April 9
Oklahoma—		
Oklahoma City	67,435	128,160
Seminole-St. Louis	122,810	118,145
Remainder of State	204,740	205,430
Total Oklahoma	394,985	451,735
East Texas—		
Kilgore	109,521	105,285
Lathrop	126 610	124.294
Joiner	107,283	107,990
Total East Texas	343,414	337,569
West Texas	178,695	178,420
North Central Texas	74,052	74,215
Texas Panhandle	52,035	46,855
East Central Texas	54.980	55,190
Gulf Coast Texas	105,522	106,050
Southwest Texas	57,417	65,215
Total	866,115	863,514
Kansas	99,730	97,510
North Louisiana	28,380	28,170
Gulf Coast Louisiana	32,862	31,675
Arkansas	35,000	34,995
Eastern fields	117,000	115,000
Rocky Mountain area	85,233	86,717
California—		
Santa Fe Springs	67,250	66,000
Long Beach	82,000	80,000
Playa Del Rey	18,500	18,500
Elwood	17,250	17,750
Kettleman Hills	60,000	59,500
Remainder of State	273,000	273,250
Total California	518,000	515,000
Total United States	2,177,305	2,224,316

→ Decrease, 47,011 Bbls. Daily ←



East Texas Is Ideal for Experiments

New Devices and Equipment Being Tried Out as Income of Operators Permits Expenditures. Production Men Meet at Tyler

By L. G. E. Bignell
Petroleum Engineering Editor

The East Texas Field has been exceptional in a great many ways and is still offering many new and interesting problems in geology and engineering. Starting with the discovery well in the Joiner area, which was just one location from the since proven eastern boundary of the productive area, the development of the field has been a series of unusual events. That these problems are still arising and that there are plenty for the geologist and engineer to work upon was clearly brought out at the recent meeting of the Southwestern District of the American Petroleum Institute, Division of Production, at Tyler, Tex.

This meeting, which was the annual one for the southwestern district, was held in the Blackstone Hotel, Tyler, Tex., on April 14, and there were more than 150 registrations. Men were there from all parts of Texas and a few from adjacent states. The program was devoted to East Texas Field problems and each paper was well received and discussed. Much was contributed to the knowledge of field problems in that area and if the methods suggested are followed it seems certain that in many instances lower production costs will be attained.

E. Stanley Durward, Shell Petroleum Corp., Dallas, Tex., presided as chairman of the district and in his opening address he suggested that one of the functions of the American Petroleum Institute was to bring about a closer understanding between the petroleum industry and the public. This can be done by co-operation between local chapters and people living in their vicinity.

"In the past, national, district and chapter meetings have been of a purely technical character," said Mr. Durward. "The oil men have been entirely bound up with their problems and have paid no attention to making the general public acquainted with their problems, aims or endeavors. To the majority of the public, the oil industry is improperly understood or even misunderstood entirely. It is thought by many to be a 'game' where vast profits are to be obtained and that, of course, the public pays. As a result of this, when we fight for fair taxation, the public does not support us and our industry is heavily penalized by taxes of all kinds. The annual tax burden on our industry now exceeds the total value of the yearly crude oil output of the country. This year we will pay approximately $814,000,000, according to figures brought out at recent Congressional debates."

Paraffin Troubles

The first paper on the program was presented by W. T. Doherty and R. C. Buchan, petroleum engineers, Humble Oil & Refining Co., Houston, Tex., and dealt with paraffin troubles in the East Texas fields. It is published in this issue of The Oil and Gas Journal and gives many valuable facts on this important problem.

In the discussion it was developed that many methods for keeping paraffin from settling to the bottom of stock tanks had been tried. Oil and gas, separately, has been used to keep the body of oil within the tank in motion, and keep the paraffin in suspense. This has had some beneficial results but does not entirely solve the problem.

If gas is used a spider of 2-inch perforated pipe is placed very near the bottom of the tank and the gas under pressure is blown through the oil to keep it agitated. Where oil is used to serve the same purpose the pipes are curved and so perforated that a current is created within the body of oil which tends to set up a rotary motion and keep the small paraffin particles in suspense.

From the evidence presented by the authors of the paper and substantiated by the experience of others it appears that the best means of limiting the formation of paraffin in the tanks is to keep the surface of the oil covered at all times with a layer of saturated gas.

Where oil comes in contact with the air, either in the tank or in pipe lines, it has been found that the surface will evaporate and a paraffin layer be deposited. This layer of paraffin will slowly accumulate on the surface of the oil and form a scum as much as 1 inch thick. When the oil is run to the pipe line the paraffin layer will break and settle and repetition of this process builds up thick layers of bottom sediment.

It has been found that tanks that are made, and kept gas tight, do not show the same tendency to evaporate the oil at the surface and the paraffin is therefore kept in suspense and moves freely with the oil. It has further been observed that when the paraffin is carried out of the tank in its original form in the body of oil it does not settle out in the pipe lines between lease and refinery.

Gas tight tanks, operated under sufficient pressure to maintain a zone of saturated gas over the oil at all times, prevents surface evaporation of the lighter hydrocarbons and reduces the forming of paraffin to a minimum. Change in temperatures will have some effect upon the formation of paraffin but in the East Texas Field the atmospheric temperature is usually high enough to prevent solidification of the paraffin in this oil.

Tapered Tubing Practice

A joint paper by H. M. Staggs, Atlantic Oil Producing Co., Dallas, Tex.; M. Albertson, Shell Petroleum Corp., Dallas; and R. B. Kelly, Pure Oil Co., Fort Worth, under the above title was next presented. It is printed in this week's issue of The Oil and Gas Journal. In the absence of the authors, T. V. Moore, Humble Oil & Refining Co., Houston, Tex., read it.

This paper gives some interesting data on what has been done with tapered strings of tubing in Texas and it is understood that several hundred strings have been run in Texas oil fields extending from East Texas across the State to the West Texas pools. The tapered tubing is being used quite successfully in Van Pool, Van Zandt County, Texas, for the past 1½ years, as well as in many wells in Ward County, West Texas, for over four years. These are in addition to the wells so equipped in the East Texas and other pools.

In the discussion it was suggested that to prevent vibration unscrewing these small string of pipe and dropping them in the hole a series of guides can be so placed that they will hold the flow string inside of the casing and prevent movement. They are recommended for the bottom of the string in all installations and some companies place other guides at varying intervals up the string to aid in keeping it in place.

To bring in wells where small strings of tapered tubing have been run it has been found that much the usual methods are followed, the time element being the greatest variable. Later when bottom hole pressures are somewhat reduced it will be possible to bail down the rotary mud to an appreciable depth and this will shorten the time required to remove the balance by washing with clear water.

At this time with the higher pressures still effective clear water is first used and pumped in through the tapered string. Flow is then reversed and water pumped down outside of the tubing string and mud returned through it. When clear water begins to put in its appearance at the top of the well the washing is finished with oil pumped in between casing and tubing, and in this way flow is established through the tapered string.

Discussion by Hawkins

In a written discussion, R. R. Hawkins, district engineer, The Texas Company, Tulsa, stated:

"In a general way it may be said that the energy for lifting oil from wells through any type of flow string can be divided into two types; i.e., hydraulic, common to West and East Texas wells referred to in these papers, and natural gas energy more common to wells in Oklahoma where tapered strings of tubing have been used.

"If it is granted that there is a source of energy supplied by the water drive in both East and West Texas fields it may then be assumed that the lifting power to move the fluid to the surface is hydraulic in type. If the hydraulic head of the water in the producing zone in East Texas is sufficient to develop pressures of 1,600 pounds at all times, it seems safe to assume that these wells will continue to flow by hydraulic pressure for an indefinite period.

"If on the other hand this pressure will later decrease to a point where the wells will not flow naturally, there will be a period when the type of energy will gradually change over from hydraulic to natural gas energy. This is assuming that there will still be gas in solution in the oil that will be released as the lower bottom hole pressures are approached.

"In the hydraulic type of flow the design of the tapered string is relatively unimportant because there is sufficient energy to lift the oil and water to the top of the hole so long as the bottom hole pressure in the well exceeds 1,250 pounds, the estimated weight of a fluid column 3,650 feet in length.

"In the second type of flowing energy, i.e., natural gas in the oil stratum, there may be a subdivision into two types of well conditions.

"In one there will be an excess of energy available to flow the oil, such as occurs in the Hunton lime zone in Seminole.

"Under this condition the design of flow string is not of great importance because the energy available will flow the well.

Where Energy Is Gas

"The other condition of natural gas energy is the one which requires that special attention be paid to the design of the flow string because the only energy available to do the work of lifting the oil is that derived from the gas and all of this energy must be utilized in an ef-

Eliminating the Continued Line

Some time ago The Oil and Gas Journal circularized a cross-section of its readers asking for their suggestions as to how this publication might be improved. Practically the only criticism offered was that articles were continued from one section of the book to another section. This was due to mechanical requirements in printing the saddle-stitched book, wherein each form going to press contained an equal number of pages in the front and back parts of the publication.

Desiring to eliminate this one criticism by its readers, The Oil and Gas Journal has purchased and installed machinery to side-stitch this publication. This issue is the first published under the new style of make-up and arrangement. The improvement will naturally commend itself to all readers, especially to the engineers and technical men who clip various articles from each issue of The Oil and Gas Journal. It will simplify the study of all articles and news stories by all readers. Every effort will be made in making up the different forms of the publication to reduce to a minimum continuing articles from one part of the book to another.

Many improvements have been made from time to time in the general appearance of the pages of The Oil and Gas Journal and careful consideration is being given at all times to still further improvements in appearance and the manner of presenting the news, engineering and technical articles and other features found in this publication.

ficient manner if the well is to be produced by natural flow.

"To design tapered strings of tubing for this last condition requires careful consideration of all conditions and in a paper presented before the fall meeting of the Petroleum Division of the American Institute of Mining Engineers in Houston, Tex., last October these essentials were discussed. (This paper was published in the October 8, 1931, issue of The Oil and Gas Journal with revisions in the October 22 issue.)

"Experience has shown that with knowledge of conditions in an area it is possible to so design tapered strings of tubing that they will reach their maximum flowing efficiency in about one year after the date of installation.

"This means that at the time they are installed they will have a less than maximum rate of efficiency, that the efficiency will gradually increase until about one year after being installed it will reach maximum and then gradually decline. The length of time a string of tapered tubing may be used within economic ranges under this system of designing will depend largely upon the rate of decline in efficiency that occurs after maximum is passed, together with the economic value of the well during this decline period.

"It therefore would seem possible to make economic application of tapered strings where it is advisable to conserve the natural gas energy and produce the well by the use of this energy beyond the time it will flow through standard strings of tubing. To accomplish the best results it has been found that the control of flow velocities in all portions of the tapered string is most essential. The formulas given in the paper referred to above have been found useful in our work in Oklahoma."

Pumping Equipment

John A. Ritter and Blaine Johnston, with the Sun Oil Co. and Simms Oil Co., Dallas, respectively, next presented their paper on "Analysis of Pumping Equipment When Required in East Texas." This was published in the April 14 issue of The Oil and Gas Journal, page 16.

There seems to be an air of uncertainty in the East Texas oil field as to when pumping equipment should be placed at the wells. Variations in bottom hole pressures have caused some wells to cease to flow, but later pressures were restored and they again came on natural production. Water movement in the oil sands is undoubtedly under way, but its rate or extent of travel are unknown factors at this time. Many opinions were advanced on this point but no definite data were presented to establish the actual difference in the water level between its original position and now.

It therefore will follow that in equipping a lease the individual experience of the operator will be the sole guide. Last winter's high water and bad roads clearly indicates what can happen to delay installing pumping equipment. From the records of wells in the Joiner Pool in the south end of the field, the oldest area in the district, it can be quite definitely stated that close drilling and rapid withdrawal will deplete the oil sands to a point where the wells will not flow.

The time element is therefore largely affected by the well spacing in the area under consideration. In younger portions of the district it may be possible to predict with some degree of certainty the time when wells should be placed on the pump judging by past experience in other parts of the field. Rate of withdrawal will be the determining feature but as the rate now seems established, a fairly true picture of the situation may be secured.

It may be stated that large portions of the field should be in position to change from natural flow to agitation, and then to active pumping sometime in the late fall and winter of this year. This will bring them into this changing period during times of bad weather and costly installations because of such conditions.

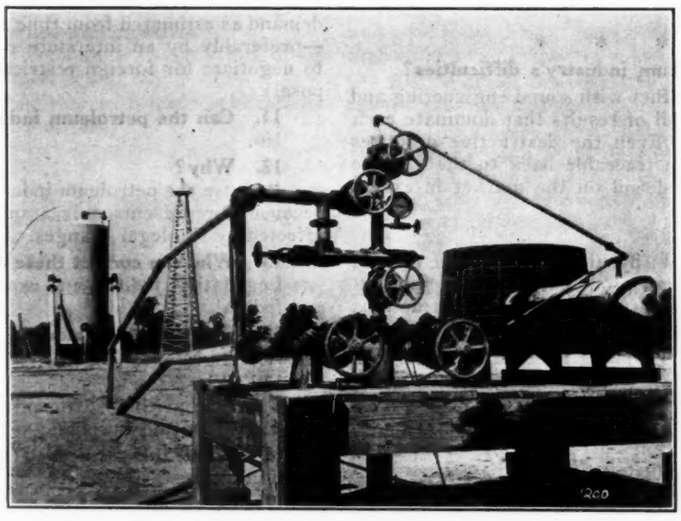
With the increase in the price of oil it is estimated that this field will show gross earnings of over $20,000,000 between now and July 15 and with this amount of money made available for new work it seems only logical that many operators will avail themselves of the opportunity to equip their leases for pumping during the summer months. This will insure them against forced shutdown at some later date because of bad roads and high water and will be fully justified from an economical standpoint.

Equipment Will Be Varied

It was stated that operators in this field will be inclined to try out many new types of equipment if the manufacturers can show them advantages to be gained by using their particular devices. Several innovations in types of pumping and flowing devices have already been tried and good results obtained. It is known that many other pieces of apparatus can be applied to problems here and now is the time to interest operators in them.

A new type of bailer is being tried out there which has given good results in California and eliminates the necessity of moving in clean out strings of tools. It has a double chamber and when a valve is tripped after the bailer reaches the bottom of the hole, the pressure exerted by a fluid column at least 400 feet high, above the bailer, will cause fluid to rush into a lower compartment at such a velocity that large pieces of material are picked up and then brought to the surface.

Bottom hole pumps of the displacement type have also been tried out in East Texas and lend themselves to use with the small strings of tapered tubing now run in many wells. This combination may solve the operator's problems in many wells, but it does not seem that there will be any universal method of producing adopted by the field as a whole and differences of opinion should present opportunities for all who have devices of merit suitable for use there.



Well head hook-up for introducing chemicals into tubing in East Texas Field to combat paraffin troubles. Lathrop Pool.

It was stated that wells will continue to flow with bottom hole pressures as low as 800 pounds per square inch. Also that wells will flow 60 per cent salt water. These conditions present a wide range for the flowing life of the wells, but other conditions indicate that drops in pressures may be quick in areas where close spacing of wells has occurred, and again the water movement may be more rapid in some parts of the field than in others.

While there is a tendency to discount the possibilities for water to move upward quickly through the producing zone in this field, it has been proven in the past, during periods of unrestricted production, that water can be pulled into the wells in east edge and in some parts of even the thicker portion of the producing stratum. Water ceased to flow into the wells when they were cut back in rate of production and properly controlled.

But the fact remains that water did make its appearance and it is only a matter of time before it will again break through and cause trouble. Bottom hole pressures have varied through appreciable amounts during the life of wells in this field, which further indicates that many things are possible and to predict just when they will occur is difficult.

Operators Making Money

At present prices for crude oil with wells flowing naturally the operators in this field should be making a profit on their operations, which is as it should be, because they have made capital investments and are justified in having a return on same with reasonable profit.

The oil man has always been inclined to reinvest his money in properly equipping his property and with all the conditions pointed out in the various papers presented at this meeting it is only logical to assume that as soon as this money is made available operators will make plans to buy pumping equipment to protect their wells against forced shutdown when the natural flow stage comes to an end.

So while the time at which this pumping equipment will actually be needed may be uncertain, it has been agreed that its use is quite certain at some period of the life of the wells, and it only follows that being forewarned the operators will be forearmed and prepared.

The first paper of the afternoon session of the meeting was read by Capt. E. H. Eddleman, executive vice president, Texas Oil and Gas Conservation Association, Fort Worth, on "Conserving Our Oil Resources in Texas." In it he outlined the growth of the conservation movement throughout the country, particularly in Texas. He also discussed the growing consciousness in the oil industry of the need and desirability of conserving that valuable natural resource (crude oil) and reviewed similar activities in other natural resource industries.

Bottom Hole Pressures

E. V. Foran, consulting engineer, Fort Worth, presented a paper on "The Interpretation of Bottom Hole Pressure Data in the East Texas Field," which is published elsewhere in this issue of The Oil and Gas Journal. It is a paper that will warrant careful reading and study.

At present there is only a small area on the west edge of the Gladewater Field where pressures between 1,525 and 1,600 pounds exist. The average pressure has been estimated at about 1,425 pounds, but this is not stated as now being the condition for changes occur quite steadily and that estimate was made in February.

Bottom hole records show that there has been a decided shifting of pressure areas in the producing zone and Mr. Foran stated that in his opinion where such changes have occurred oil and gas have moved together, and as a body, from areas of high to areas of low pressure. This is the conclusion reached after consideration of the fact that all gas is now in solution in the oil and both oil and gas should therefore move together as differentials in pressures in sands are created.

This will bring about a replenishment of drained areas with oil and gas taken from portions of the sand less depleted and under higher pressures. Close spacing of wells will create low pressure areas and if these wells continue to produce they must of necessity be draining the oil from adjacent areas of higher pressure and saturation.

As soon as the water movement becomes effective over the whole field pressures will again build up until the water actually breaks through into the producing zone and after that there should be a maintenance of pressures at practically constant rate throughout the field. The hot water will flush the oil ahead of it and if rate of withdrawal is controlled it is only reasonable to assume that this field will yield a high percentage of the oil in its reservoir.

Mr. Foran's paper brought out a considerable amount of discussion and many very valuable points were established. It was agreed that controlled rate of production is necessary, but whether this should be by allowing all wells to produce the same amount of oil per day, or whether some other form of allowable should be established based upon relations of wells, spacing and character of producing formation, is still an open point.

Election of Officers

Walter H. Meier, Atlantic Oil Producing Co., Dallas, presented a report for the nominating committee and the following men were nominated and elected:

Chairman, Blaine Johnston, Simms Oil Co., Dallas, Tex.; vice chairmen, West Texas, William Vietti, The Texas Company, Wink, Tex.; East Texas, John A. Ritter, Sun Oil Co., Dallas; Gulf Coast, W. T. Doherty, Humble Oil & Refining Co., Houston; North Texas, C. B. Clement, The Texas Company, Wichita Falls; Arkansas and Louisiana, Col. W. C. O'Ferrall, Standard Oil Co. of Louisiana, El Dorado, Ark.; and secretary and treasurer, C. W. Alcorn, Shell Petroleum Corp., Dallas.

The advisory committee will be headed by P. H. Morrison, as chairman. He is with the California Co., Dallas, and succeeds John R. Suman, Humble Oil & Refining Co., Houston, who is still retained on the board. The others are M. G. Cheney, Anzec Oil Corp., Coleman, Tex.; C. S. Saunders, Stanolind Oil & Gas Co., Fort Worth; Charles Roeser, Roeser & Pendleton Co., Fort Worth; W. L. Todd, Columbia Oil & Gas Co., Dallas; E. G. Allen, Shell Petroleum Corp., Dallas; E. H. Blum, Atlantic Oil Producing Co., Dallas; J. D. Collett, O'Keefe & Collett, Fort Worth; T. J. Donoghue, The Texas Company, Houston; F. V. Faulkner, Magnolia Petroleum Co., Dallas; Charles Fitzgerald, Pure Oil Pipe Line Co. of Texas, Dallas; James Hutcheson, Rio Bravo Oil Co., Houston; Blaine B. Johnston, Simms Oil Co., Dallas; Roy B. Jones, Panhandle Refining Co., Wichita Falls; F. Ray McGrew, Standard Pipe Line Co. of Louisiana, Shreveport; Underwood Nazro, Gulf Production Co., Houston; M. B. Sweeney, Sun Oil Co., Dallas; and B. S. SoRelle, Pure Oil Co., Fort Worth.

DEATH OF MARK FINSTON

Mark Finston, widely known in the refining and natural gasoline trade, died in Tulsa on April 12. Mr. Finston had resided in Tulsa since 1917, coming from New York where he had been engaged in the manufacture of jewelry. He became interested in the manufacture of gasoline from natural gas and shortly afterward organized the Bell Oil & Gas Co. His two brothers, Albert and Jesse Finston, were partners in his operations. Mrs. Finston, one son, Arthur, and daughter, Rose, survive. Mr. Finston was well known for his charities, and about a year ago founded the Mark Finston Foundation at St. Johns Hospital in Tulsa, for research in medicine and surgery.

Oil Industry's Problems and Remedies

Cross-section of Opinion from Many Leaders Shows Remarkable Similarity of Thought. Public Support Needed

By Earl Oliver
Ponca City, Okla.

The writer, under direction of The Oil and Gas Journal, interviewed many leaders of industry, of government, of law, of politics, in the endeavor to find out what is wrong with the oil industry and, if possible, what the cure is. It would be impossible to set out in detail the many answers given, but in attempting to sift them out and find what they all mean, we believe we have found a remarkable similarity of thought running through them all. They differ in detail but in fundamentals they agree.

We have attempted to piece these answers into one complete whole in as simple a manner as possible. We believe the questions and answers hereafter propounded accurately represent a fair cross-section of opinion, as we found it to exist among well informed leaders in these various fields of activity. They are given here in the hope they might help to simplify a somewhat complicated problem. We believe a sympathetic public opinion and unanimity of action can be developed toward correcting the oil industry's ills if the procedure hereinafter suggested, arising out of the observation of many men, is observed.

* * * * * *

1. What is causing the petroleum industry's difficulties?

The basic laws of oil and gas conflict with sound engineering and economic principles and initiate a trail of results that dominate each successive branch of the industry. Even the destructive practices of the marketing branch are largely traceable back to the capture theory of ownership that forces crude oil on the market in excess of current demand.

2. How manifested?

By a competitive race to extract; by unfair division of oil and gas; by vast duplication of developing, producing, transporting, refining, and marketing facilities; by inefficient wasteful extraction; by failure of the law of supply and demand to operate effectively, thereby causing chronic overproduction; and by uncorrelated marketing—all resulting in high production and marketing costs, destructive sales competition and elimination of profits.

3. With what result?

Ruthless destruction of the nation's irreplaceable natural resources and economic chaos in the industry.

4. Who is injured, and how?

Oil company stockholders, through loss of capital investment and dividends; labor, through irregular employment; royalty and landowners, through decline of royalty, rental and bonus payments; consumers, through destruction of supply leading to eventual high prices; the State, through loss of taxes; everybody, through demoralization of business.

5. Who is benefited, and how?

Nobody, not even the supply houses, for their business is rendered unstable by these conditions. The consumer's apparent benefit is misleading. He could enjoy the same permanent reasonable prices through sharing in the saving made possible out of production and marketing costs under proper methods, and in addition avoid later exceedingly high prices by delaying exhaustion.

6. Can these ills be corrected without changing the law?

No.

7. Why?

Because the law determines the right of each owner and thereby controls the method of development.

8. What changes in the law are necessary?

Changes that will promote instead of prevent the application of sound engineering and economic principles to the development of oil and gas pools.

9. Would this mean increased governmental supervision?

No. On the contrary suitable changes would eliminate the need for extensive governmental supervision. The present laws promote methods of development and operation altogether unsuited to the products to which they apply. Suitable laws would permit the several states to dispense with martial law control or state employed umpires and to hand back the operation of oil properties to their respective owners, to the great good of government, the owners, and society generally—for the state government has other more suitable functions to perform than to supervise in great detail privately owned oil properties as it is compelled to do under present oil and gas laws

10. What should be the chief characteristics of these changed laws?

(a) They should be directed toward efficient development and production practices, not only in the public welfare but that no one owner shall by his method injure another owner.

(b) They should substitute for the "capture theory" in oil and gas, regulatory action in development and operation that would have the same practical results as would "ownership in place" strictly applied.

(c) They should protect the small owner against injustice or elimination.

(d) They should protect the consuming public against exploitation in price or waste of product.

(e) They should provide for restricting production to market demand as estimated from time to time by some governmental agency —preferably by an interstate compact organization also authorized to negotiate for foreign restrictions (as per Secretary Wilbur's proposal).

11. Can the petroleum industry alone correct the difficulty?

No.

12. Why?

Because the petroleum industry is not the law-making body; also because it represents only a small percentage of those who will be affected by the legal changes.

13. Who can correct these difficulties?

Legislative, judicial and executive branches of government, state and federal.

14. Can they do it alone?

No.

15. Why?

They are neither sufficiently informed on the problem nor sufficiently supported by public sentiment.

16. What, then, is needed?

Education.

17. Of whom?

Oil men, royalty owners, landowners, consumers of petroleum products, voters, lawyers, legislators, judges, attorneys general, governors, presidents, and other officials of government, both present and potential, so that united thought and action might be developed among all interested parties.

18. On what?

On efficient engineering methods of oil pool development and operation; on why and how present oil and gas laws interfere with application of efficient engineering methods, and on the penalties that are being paid because of the present laws by consumers of petroleum products, taxpayers, and society generally; also by royalty owners, landowners, individual producers, and oil company stockholders. The method should be that of true educational and factual information as distinguished from propaganda.

19. Education by whom?

By innumerable petroleum engineers, oil lawyers, company executives, and others who have made a study of those problems.

20. Why is it necessary to educate such a vast and varied number of people?

Because all these people are directly interested and, consequently, are entitled to a voice in settling the question; because they are not only entitled to a voice, but can successfully demand it since they can defeat or control the proposed legislation and will do so if its merits are not understood by them. Their power to defeat or control legislation is in proportion to their voting strength and in that respect the consumer far outweighs all others. Since government officials, who alone can change these laws, not only represent the oil industry but in like manner represent the consuming public that can and will remove any official who is believed to have betrayed their interest, it is imperative that the consuming public be educated as to the merits of the proposed change.

21. Can this vast educational program be successfully promoted without being well organized?

No.

22. What educational agencies are available?

Trade associations, scientific and professional societies, governmental agencies, trade journals, newspapers, civic clubs, national defense organizations, etc.

23. What is a trade association?

A voluntary combination of members of a class to promote the mutual welfare of its membership.

24. Name some trade associations that would be appropriate educational agencies for this purpose.

American Petroleum Institute, National Petroleum Association, Mid-Continent Oil and Gas Association, Independent Petroleum Association, Mid-Continent Royalty Owners Association, Texas Oil Conservation Association, etc.

25. What is a scientific society?

A voluntary association of members of a class to promote certain knowledge for the benefit of society generally.

26. Name some scientific and professional societies that would be appropriate educational agencies.

American Institute of Mining and Metallurgical Engineers. American Association of Petroleum Geologists, American Society of Mechanical Engineers, American Bar Association, state bar associations, etc.

27. What is a government?

An organization of all individuals in a given area to regulate and control their mutual conduct toward each other.

28. Name some appropriate governmental agencies.

Federal Oil Conservation Board, Oklahoma Corporation Commission, Texas Railroad Commission, etc.

29. Are all the agencies named, together with trade publications and newspapers, needed in this educational task?

Yes.

30. Why?

Because of the magnitude of the task. Changing the habits of a vast industry and enlisting the confidence and consent of 40,000,000 voters, who are likewise gasoline consumers, to pass laws permitting that change is no small undertaking. Each of the agencies named will educate individuals within the circle of its own influence and the sum total of their several influences will be cumulative in effect, thus accomplishing the task much more rapidly; also because a task so handled is not only more certain to safeguard the rights of all interested parties, including consumers, but participation by their own leaders in formulating the change and promoting it will enlist the confidence and co-operation of those whose personal interests are affected. All the trade organizations affiliated with the oil industry are needed because the members of each have a special interest to protect. The scientific societies are needed to take the movement out of the realm of partisan activities and shape it to the welfare of society generally. Government agencies are needed not only to inspire confidence that the interests of all will be protected but also to assist in promoting the processes of law by which the change is to be made. The trade publications are the channels through which education is carried to those engaged in the industry, and newspapers are the channels through which education is brought to the consuming public. Civic societies are additional educational channels.

31. Can any one agency of these many successfully accomplish the task alone?

No.

32. Why?

In the first place it would be too slow. No one agency has force and influence to move the load. In the second place the movement must be taken from the realm of selfish group promotion and placed in the broader field of benefits to society generally before all the necessary influences can be organized behind it. These several agencies, including trade publications and newspapers, will not lend themselves to partisan propaganda whereas they will lend themselves to the dissemination of scientific truth when that dissemination is clearly needed for the welfare of society. In the third place each individual and group naturally and properly feels that it is entitled to a voice in settling any matter involving its own welfare, and when excluded from exercising such voice resents the exclusion. Any single agency asserting the exclusive right to formulate solutions that involve the welfare of innumerable others will arouse suspicion, resentment and opposition too great to overcome. Those excluded feel some advantage is being taken of them and the suspicion is usually well founded, for a solution worked out by only one party in interest is likely to be biased in its effect.

33. How, then, can this great educational and legislative program be most effectively promoted?

By creating a central committee or organization that will gradually draw together into a united effort all the organizations named in questions 23 to 29, inclusive, that are willing to promote this movement, or such members of those organizations as favor the movement when the organization itself cannot join in promoting it, because of divided sentiment among its membership. Stabilizing the petroleum industry is of sufficient consequence to justify taking whatever reasonable means will most effectively accomplish that end.

34. What should be the characteristics of the proposed central organization?

(a) It should be 100 per cent for the program.

(b) It should be composed of individuals from every class of people that would be affected by the legislation.

(c) Its members should be selected, first, because of their peculiar fitness for the task undertaken, and second, because of their influence with their own class.

35. Why not use an organization already set up?

Because none of those now in existence meets the necessary qualifications. Having been organized for entirely different purposes, it is not to be expected the membership of any one selected would be found 100 per cent for this program, or that it would be truly representative of all groups that would be affected by this legislation, or that the members were particularly fitted to promote or would take the time to study and present a complicated engineering-economic-legal problem.

36. From what groups should members of the proposed special organization be drawn?

From the oil industry, law and government. From royalty owners and producers. From "independents" and "majors." From consumers and taxpayers. From state and federal agencies.

37. Will not this diversity of representation make an agreement upon a program difficult?

No. Engineers are in 100 per cent agreement unit operation is the desirable method of oil field development. Officials of government and leaders of industry both agree that some method should be devised whereby production can be restricted to market demand. Division of oil and gas from a common reservoir among the several landowners in proportion to the extractable content of their own land is generally regarded as fair. These are also the objectives sought by the oil industry. If it secures them it is not concerned by whom they are secured. If selection of membership is conditioned upon acceptance of these principles with the purpose of promoting their adoption by legislation, the greatest element of division is thereby eliminated. The chief function of such an organization would be widespread education. Members of any organization who agree on the basic principles and are organized to promote them are not likely to differ on mere processes of education.

38. What are the chief obstacles to overcome in promoting this program?

Selfishness, fear, and suspicion—selfishness, in that each interest is frequently disposed to demand undue advantage at the expense of others and a deadlock ensues; fear of those competitors in whom much power is centered; and suspicion as to the good faith of those in position of leadership. Both unit operation of oil pools and restriction of production to market demand are being, and have been, regarded, misunderstood, and misrepresented by those opposed to them as mere devices of major oil companies to secure monopolistic control of the oil industry to the disadvantage of both the consumer and "independent." These two latter groups have such overwhelming voting strength that they can and will defeat any legislation promoting these remedies unless convinced said remedies would be beneficial to them.

39. How can these obstacles be overcome?

By education, by co-operation, and by leadership. Any thorough consideration of all facts will clearly demonstrate that both unit operation and restriction of production to market demand will tend to promote, if in fact they are not actually essential to economic recovery of the oil industry. Also that instead of being detrimental to consumers and "independents" they will be highly beneficial to both groups provided proper safeguards are thrown around them. Many leading "independents," consumers, and officials of government are advocates of these measures. Enlisting their co-operation will inspire confidence in those several groups that adequate safeguards protecting them will be established.

Any determination of market demand should be made solely by government agencies. Perhaps it should be determined by an interstate compact organization in which the federal government as well as the several oil producing state governments will participate. In that event the consuming public will have every assurance the figure set from time to time as "market demand" does in fact represent such

an approach to that concept as is to the best interest of all parties concerned. Representatives of government, both state and federal, should, therefore, also be among those included in the special organization, so that consumers will have all assurances their interests are being protected.

Establishment of confidence on the part of all interests to be affected is the one prerequisite to successful promotion of the legislative campaign. Knowledge on their part of the things being done, and the privilege of participating in their development, are highly important; but over and above these must be leadership that will develop and maintain a broad, unselfish, open door program—a leadership with vision, courage, and loyalty. Both industry and government are full of such men who have attained leadership in their own respective fields of action, large or small as that may be. Great numbers of these should be enlisted to form this special organization and to assist in promoting its objectives. Should the effort be so organized there is little doubt but that, with the help of the agencies named in questions 23 to 29, inclusive, public sentiment would soon not only permit but would even demand that legislation of the type we have described shall be adopted.

An effort organized in this manner, participated in by those outside the oil industry as well as those within, would develop a sympathetic public attitude toward the industry and a freedom of action for it that could not be secured if the industry were to promote the effort solely through its own membership and without outside help. A reasonable freedom of action for the oil industry is necessary if it is to serve society efficiently. The legislation problem does not arise out of the law's inability to correct, or even lack of knowledge of what law is needed, but it is due instead to fear on the part of the public that what is requested might enable the present large companies to become even larger and more powerful—all at the expense of the public and the small companies. Obviously this fear can be dissipated more effectively by students of the problem not interested in the large companies than it can by the large companies themselves. Any legislation adopted will have fewer objectionable restrictions if secured in the manner described rather than through the sole efforts of the industry. A familiar example of the latter type is the result that came from the recent special session of the Texas legislature wherein the law finally evolved had so many restrictions that it appears to be wholly inadequate to meet the situation and continuance of martial law has been found necessary to prevent a return of chaos.

The oil industry is entitled to suitable legislation that will enable it to serve efficiently. But securing it is a political undertaking. Progress will be made when it is recognized that that which is requested runs counter to the prejudice of millions of voters in whose hands the decision lies. Consequently any success means a campaign of education that will break down that prejudice. Facts are available with which to do it, and success is possible provided the plans are made equally extensive as is the magnitude of the task to be undertaken. The end sought is worth careful planning. This is a political problem and must be so handled.

40. Does this mean use of so-called practical politics?

No. The number of people that might be affected by these changes is too vast to enable them to be brought about in that manner. Instead the changes can only be accomplished through the means intended by those who designed the American form of government, namely, through an educated public opinion.

41. Is there a fundamental difference in approach between a political problem and an industrial one?

Yes, the distinction involved in the age old conflict between human rights and property rights.

42. Does this distinction have a bearing on the problem under consideration?

We believe it does. At least an attempt will be made to analyze it in the hope it will re-emphasize the kind of approach that must be taken to secure the desired legislation in this instance.

The primary function of government is to protect human rights while that of industry is to deal with property rights. The second, of course, is merely subsidiary to the first, but their origins are so remote and their personnel so distinct that their true relationships are not always clearly defined. Too frequently they are regarded as conflicting spheres of action. Regarding the first it might be said the people of the United States are thoroughly imbued with the spirit of democracy—that all men are free and equal, which merely means that every man feels he is entitled to a voice in the adjustment of those things which affect him. It is the right that man has fought for through the ages although he rarely uses it wisely. Nevertheless he is jealous of it and will continue to fight for it perhaps even more strenuously than for any other single thing. All government in the United States, state and federal, was designed to perpetuate that right. Every citizen was given a vote and he does not hesitate to use it when he is led to believe that right is being violated. Elections were made frequent and terms in office short so that officeholders might not forget where authority lies. Government built on that principle has disadvantages as well as advantages. Nevertheless it is the system we operate under and any legislative proposals that seem to run counter to it will meet with insurmountable opposition regardless of their inherent merit. Thus government in the United States is democratic in form and spirit.

On the other hand, by the very nature of the case industry cannot be so. Those in authority are placed there by the owners of capital invested and their primary duty is to secure returns on that capital. Where great aggregations of capital are brought together the individual in command wields great power over the welfare of many human beings and the measure of his success is the amount he can get from and out of those over whom he wields this power. His obligation to his employer demands that of him. As the wealth he controls increases, his power over human beings increases correspondingly, and since his duty is to extract wealth from them, they in turn through their votes undertake to see that he shall not use his power unfairly. It is out of this ebb and flow of power the antitrust laws spring and they will probably be with us in some form so long as capital combines and men remain free. They cannot be eliminated; they can only be adjusted.

While, therefore, American government is democratic in form and spirit, industry of necessity is autocratic in form and spirit. In American government power rests at the bottom and every precaution was taken to insure its remaining there. In American industry power of necessity rests at the top and precaution is taken by those who set up the machinery of industry that it shall remain there. That form of organization is more efficient.

Thus autocracy in industry and democracy in government both have their merits as well as their defects, and we believe it is well that the two exist together in this complementary relationship, for democracy in government tends to protect and perpetuate individual human rights while at the same time autocracy in industry tends to give the desired efficiency that arises out of that form of management. They tend to neutralize each other and form a composite result better than either alone would do. Yet these two conflicting principles working together in this close relationship also tend to promote conflict between government and industry, or at least promote difficulty on the part of their respective leaders in arriving at a common viewpoint as to type of legislation that will best serve society.

We again refer to the recent Texas legislative effort as a familiar illustration of the difficulty that arises out of these conflicting viewpoints of government and industry. Perhaps no question existed in any quarter relative to the need of legislation. The State, the industry, consumers, labor, landowners, and society generally were suffering greatly by the absence of suitable legislation and no one benefited by its absence. It seemed incredible before the special session was called that corrective legislation of some kind would not be quickly passed.

The various bills presented were concededly inadequate solutions in that they did not go to the root of the trouble, but at least some of them promised a measure of relief and had the support of the great bulk of the Texas oil industry. They restricted certain freedom of action previously enjoyed by the individual, but that is characteristic of most every law passed. However, the opposition to legislation in any form managed to arouse suspicion against that which was proposed by branding it monopolistic. This charge, groundless as it was, was sufficient to develop so many restrictions and safeguards as to render the resultant legislation wholly inadequate under which to operate the Texas oil industry and portions of it have since remained under martial law.

Consideration of the spirit of democracy in America life operating under a form of government that permits every man or woman to register his or her resentment or distrust in an effective manner, socretly and without fear of reaction will make clear why the Texas legislative attempt failed to produce suitable oil and gas laws and why any other like effort will fail, either in Texas or elsewhere that voting is free, unless public understanding is developed as to what the issues are about, and confidence is established that liberty is not being surrendered. Otherwise legislation of the type proposed runs counter to prejudices that will defeat the undertaking—or result in compromises that are little better than the evils meant to be corrected.

Conclusion

Thus we repeat, any legislation proposing a solution that might affect practically every inhabitant of this land through the price for which he or she purchases gasoline and other petroleum products; that might affect the freedom of action of the so-called independent oil man or oil company; that might modify the character of interest held by the vast multitudes of royalty owners—would have difficulty of passage under any circumstances unless its merits were understood. But when in addition it is misinterpreted and misrepresented as giving additional power to and for the benefit of great oil companies already vast in extent, and in popular estimation wealthy beyond the dreams of avarice, then passage of the legislation becomes impossible—unless an understanding public sentiment can be developed. And that public sentiment can be developed only through the co-operative action, not merely of the great oil companies, but of the consumers, and government officials, and scientists, and independent operators and royalty owners, and others who know the problem and the price society is paying for the present unsound methods of development. With such co-operative action well organized we believe an understanding public can be developed. And certainly the issues at stake justify the attempt.

Bartlesville Sand Pools Compared With East Texas Woodbine Sand

Water Encroachment in Northeastern Oklahoma Affects Recovery Problem

By D. R. Snow
Chief Geologist, Barnsdall Oil Co., Tulsa*

Water encroachment has commonly been viewed with great alarm; the first appearance of water in any large amount, in a new field, has been considered as marking the beginning of the decline in production and the removal of that area as a menace to the existing crude price structure. In the Bradford, Pa., Field water flooding operations have proved that water may be of great help in securing additional oil, so it is evident that water may be a menace or a benefit, depending upon the conditions under which it enters the sand.

Because of the similarity of conditions of the reservoir rocks in East Texas to the Bartlesville sand pools of Oklahoma, it is interesting to inquire into the history of water encroachment in these pools and study the effects of such water encroachment on the rate of flow and ultimate recovery of oil.

Bartlesville Sand in N. E. Oklahoma

The map (Figure 1) covers an area approximately 100 miles from north to south and 115 miles from east to west, and shows the areal distribution of the Bartlesville sand over the region under consideration as it would appear if the overburden were removed. In those areas where well log correlations show the sand to be a continuous body, it is represented by continuous lines; where the sand is very thin or broken, by dashed lines; and where absent, by blank spaces. Many small areas producing from the Bartlesville sand are not shown on the map.

The Bartlesville is a sand member of the Cherokee shale formation of Pennsylvanian age. It is, in many places, an interfingering of sand and shale, rather than one single member, and while in certain parts of northeastern Oklahoma it can be traced as a sheet or continuous sand body, in other parts it is composed of members which form a sand zone rather than a solid body of sand. The total extent is much greater than shown on the map.

One of the striking features shown on the map is that the area extending westward for several miles from the outcrop, which is known as the Bluejacket sandstone, is an area of broken and shaly sand. There is an area extending from north to south nearly across the entire map where there has apparently never been any deposition of the sand. It is apparent that this area of no sand or thin sand has formed a barrier to the updip migration of oil which resulted in the accumulation of the oil in three of the largest of the Bartlesville fields, Nowata, Bird Creek and Glenn Pool. The thinning toward this no-sand area and the resulting trapping of the oil in the eastward extending lobes of the main sand body give rise to a reservoir condition very similar to that of the truncated Woodbine sand of the East Texas Field. A similar condition in relation to the sand body shown at the extreme left of the map accounts for the accumulation of oil at Burbank, also the Yale-Maramec Fields. The accumulation of oil at Cushing is due to both structure and thinning of the sand.

The profile (Figure 2) shows that this sand lying to the west really occurs at a slightly different horizon in the Cherokee shale than the main body of sand. This fact has given rise to a difference of opinion as to whether it should be called Bartlesville, some preferring to use the name Burbank or Red Fork. The profile also shows the general structure conditions of the sand to be that of a monocline dipping to the westward at the rate of about 30 feet per mile.

Water Occurrence in Bartlesville

Analyses of waters from the Bartlesville sand show it to be connate, the total concentration of solids being several times that of sea water. In nearly all cases, the sand is saturated with water wherever the pore spaces are not filled with either gas or oil. In most places, when the sand is penetrated without finding either gas or oil, water will rise in the hole very quickly; when it does not, the reason is either a lack of porosity or a lack of hydrostatic pressure because of being in an isolated sand body or on the updip thinned out edge of the sand.

Water and Oil Production

Nowata Area—The Bartlesville sand in this area is quite variable in thickness and, in some places, is separated by shale partings into members, one or more of which may produce in a given well. There is almost a total lack of water in the entire area, although some water does occur at the extreme northwestern edge of the Delaware Extension Field and at one or two isolated spots on the west side of the main field. It may be said that water has not been either a menace or a help to the production from this area.

Bird Creek Pools—Water production per well in this area is greater than in any of the other fields shown, being approximately 6½ bbls. per well per day, while oil production is about one-third of that amount.

Burbank Field — Some bottom water occurs in nearly all parts of the field but it is thought that this water was always present as it does not increase in volume and as the water in any particular well decreases, the oil production decreases also. The average water production is about twice as great from the western half of the field as from the eastern part and the oil production is also in the same ratio. This is a strong indication that the presence of water, even though it is not under a great pressure, is beneficial to both the rate of production and the ultimate recovery of oil.

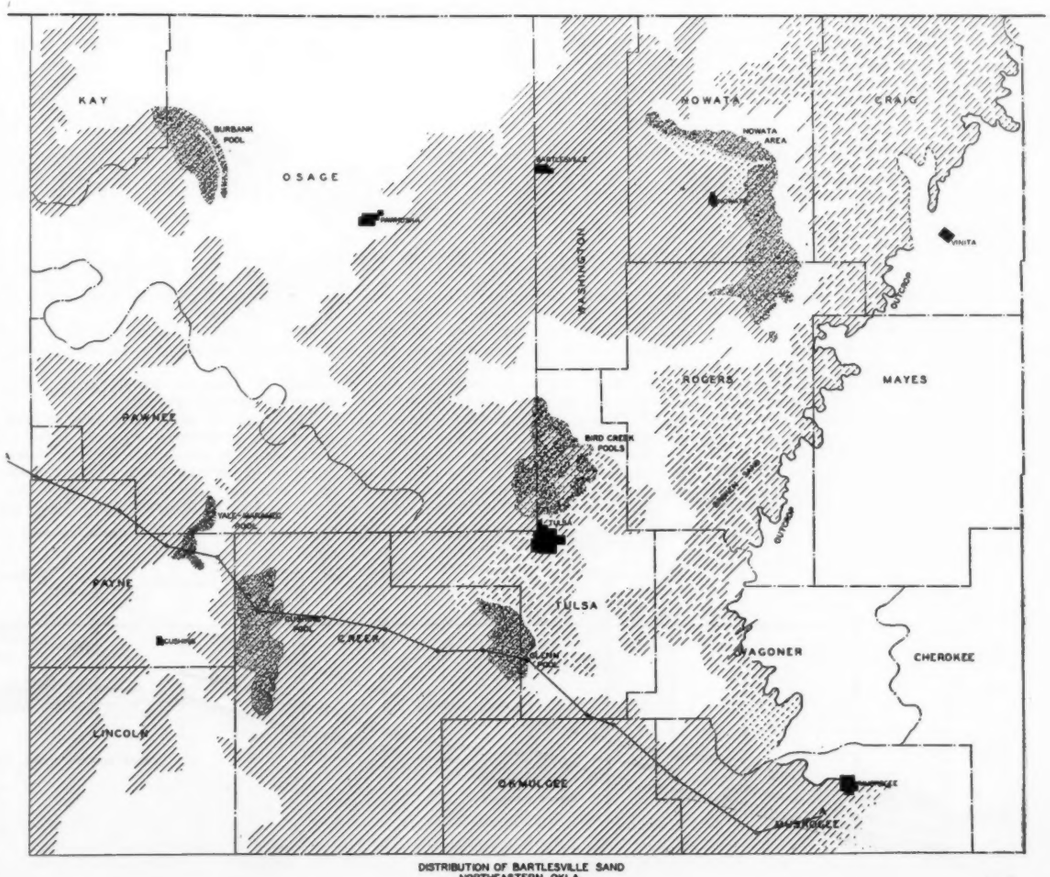
The yield per acre has been 8,268 bbls. up to January 1, 1932. With a daily production of about 12,000 bbls. at the present time, the daily production of oil averages 6 bbls. per well, with a water production of half that amount. It is evident that the total ultimate recovery per acre will not exceed 9,000 bbls. This is not more than half the ultimate recovery that was anticipated for the field during the early stages of its development based upon the average thickness of the pay horizon and its porosity.

The Rainbow Bend Field of southeastern Kansas produces from the same horizon as Burbank; the general conditions surrounding the field are very similar to those at Burbank, gas being the only expulsive force in the sand. Here again the average recovery per acre has been little more than one-half of that which was expected (approximately 7,500 bbls. to date).

Glenn Pool — The number of acres drained is about 27,000 and yield per acre about 7,719 bbls. The present oil production per day is about 6,000 bbls. The amount of water produced in the field has remained practically constant for many years and at the present time is approximately 7,000 bbls. per day, or an average of 2.7 bbls. per well per day against an oil production of 2.3 bbls. per well per day.

It has been demonstrated by wells recently drilled on the southwest edge of the field that there is still a hydrostatic pressure on the sand. There have been some recent completions which have filled up to the surface with water and wells drilled on the west edge of the field can easily be drowned out by bottom hole water if the sand is penetrated too far. It is evident from the map (Figure 1) that there is an ample source of water to maintain the hydrostatic head as it is withdrawn with the oil production.

It appears evident from the fact that there must be a considerable pressure against the portions of the sand which are saturated with oil, that these oil sat-



DISTRIBUTION OF BARTLESVILLE SAND NORTHEASTERN OKLA.

Figure 1.

*Abstract of paper presented before annual meeting of A.A.P.G., Oklahoma City, March 24-26, 1932. Complete paper will be published later in Bulletin of A.A.P.G. along with other similar papers.

urated sand bodies offer a tremendous resistance to the encroachment of water and that such resistance has effectively acted to prevent the migration of water into the sand.

Those most familiar with conditions in Glenn Pool and in the other fields previously discussed, are of the opinion that a very small percentage of the oil has been extracted from the sand. If the hydrostatic pressure known to be present were an effective repressuring or expulsive force, the recovery of oil would have been much greater than that which has been taken out and mechanical means of repressuring, which are being used effectively, would be unnecessary.

Conclusions

The total area of the large fields producing from the Bartlesville sand in northeastern Oklahoma is about the same as the total area of East Texas Field (100,000 ocres).

The average thickness of saturated sand is fully as great as East Texas.

These fields have produced an average of only 8,000 bbls. per acre or a total of 800,000,000 bbls. to date.

Recovery to date about 15 per cent of the total oil content of the saturated portions of the sand.

Low recovery probably due to ineffective water drive and ineffective use of gas which was the only expulsive force.

Cross-sections 2 and 3 represent relation of oil sand reservoir to the water saturated portion of the sand body in Glenn Pool and East Texas.

Conditions affecting hydrostatic pressure in the two fields are very similar.

Study of the map and cross-sections might lead to the conclusion that water encroachment will not be more rapid and effective in East Texas than it has been in Glenn Pool, except for two important points of difference:

1. The hydrostatic pressure on the western edge of the East Texas Field is more than twice as great as that along the western edge of the Glenn Pool Field, being represented by a column of water approximately 3,650 feet in East Texas as compared to a hydrostatic pressure represented by a column of water 1,650 feet high at Glenn Pool. This is a very important difference and it can easily represent the difference between an effective and an ineffective pressure.

2. Another important difference arises from the fact that the average porosity of the Woodbine sand (and of still greater importance, its permeability) is considerably greater than that of the Bartlesville sand. This condition of greater porosity and permeability would decrease greatly the resistance offered by the capillarity of the sand to the encroachment of water and increase greatly the effectiveness of water flushing in the East Texas Field, providing the production from the field is controlled so that the water may have an opportunity to advance evenly along the water-oil contact without by-passing the oil and shutting it off from future recovery.

Bottom Hole Pressure

Late information from bottom hole pressure readings points strongly to the conclusion that there is going to be an effective water drive in the East Texas Field. If this water encroachment is properly controlled by keeping the allowable output of the field at a low figure, it should at least double the recovery over that which could be expected if such a water drive does not take place. This conclusion is based on the fact that in those fields where there has been no effective water drive (for example, the Bartlesville sand fields described above) although other conditions were very similar, the ultimate recovery of oil by natural flow and by pumping has been very disappointing and is much less than would have been calculated on a theoretical basis from the known thickness, porosity and saturation of the sand. Another situation pointing to the same conclusion is the fact that the decline in bottom hole pressures in the East Texas Field during the period of heavy withdrawals was at such a rate as to indicate an ultimate recovery per acre of much less than that which it was calculated should be recovered, based upon sand thickness, porosity, and saturation. Actual per acre recoveries of 35,000 to 40,000 bbls. from other Woodbine sand fields where there has been an effective water drive point to the same conclusion.

The bottom hole pressure readings above referred to indicate that the slow rate of withdrawal, which has been permitted during the last two or three months in East Texas is allowing sufficient time for water to advance along a uniform front and to maintain the reservoir pressure at very nearly a constant figure. Time is an important element in an effective water drive. Therefore, if the greatest benefit is to be derived from this repressuring force of the advancing water, the oil should not be withdrawn from the reservoir at a greater rate than the water can enter the sand along a uniform front. It should be possible to determine this rate of advance by determining the rate of flow at which bottom hole pressures decline most slowly.

As oil fields become increasingly difficult to locate, this problem of securing a much greater recovery of oil known to be in the sand is going to be one of the greatest problems confronting the oil industry, and it seems likely that proration, unwillingly forced upon us, will contribute much information toward its solution which would otherwise never have been obtained.

Notes

Wells "A", "B" and "C" are in different parts of the East Texas Field, and the data covers a series of bottom-hole pressure readings taken at various intervals, and is cited to substantiate this conclusion. The pressures were as follows:

BOTTOM HOLE PRESSURE READINGS, EAST TEXAS FIELD

Well "A", North Area:	
June 10, 1931	1,470 lbs.
August 22, 1931	1,389 lbs.
August 30, 1931	1,453 lbs.
November 23, 1931	1,377 lbs.
January 1, 1932	1,366 lbs.
February 28, 1932	1,370 lbs.
Well "B", Center Area:	
June 11, 1931	1,530 lbs.
August 6, 1931	1,470 lbs.
August 24, 1931	1,458 lbs.
August 29, 1931	1,492 lbs.
November 19, 1931	1,453 lbs.
January 1, 1932	1,434 lbs.
Well "C", South Area:	
August 11, 1931	868 lbs.
August 24, 1931	1,017 lbs.
August 29, 1931	1,086 lbs.
November 29, 1931	1,098 lbs.
February 29, 1932	1,190 lbs.

Note 1. The excessive drop occurred prior to military shutdown.

Note 2. The repressuring and building up of pressures occurred during military shutdown.

Note 3. The rapid decline period was when oil was being withdrawn at rates under 225 bbls. allowable and is due to localized drilling.

Note 4. Gradual flattening of decline due to distribution of wells and production.

Note 5. Pressure maintenance is due to water encroachment.

The results of many tests substantially prove the repressuring and pressure maintenance is not caused from local distribution of pressure but is brought about by a very intrinsic water encroachment.

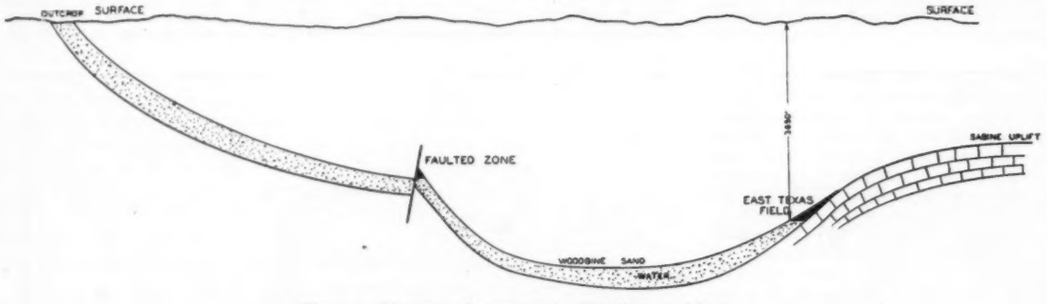


Figure 3—Diagrammatic cross section Woodbine sand basin.
Not to scale.

REESER URGES SUPPORT FOR THE SHARKEY BILL

E. B. Reeser, president of The Barnsdall Corp. and former president of the American Petroleum Institute, has sent the following telegram to James Rolph, Jr., Governor of California, in regard to the Sharkey conservation bill which comes up for vote in California May 3:

"Having given careful consideration to the Sharkey conservation bill and the probable effect its adoption will have on the economic situation in California, I have been much interested in the discussions and statements for and against the measure. The principal objection to the bill by a comparatively small group seems to be the fear of excessive increases in the price of gasoline and that it will eliminate the independent operator. May I suggest that the price of petroleum and its products, including gasoline, cannot be greater in California than it is in Texas or the Mid-Continent Field plus transportation charges. Transportation charges from Gulf points to California are about 1½ cents per gallon. Modern transportation and facilities equalize prices everywhere and especially along the seaboard.

"Notwithstanding Oklahoma production has been and now is under the strictest kind of state regulation gasoline prices have been ridiculously low. The fear of excessive prices in California is not justified. Production in Oklahoma and Texas has been under state control for a sufficient length of time to correctly answer the fear of eliminating independent operators. It is true that deeper and more costly drilling has restricted the small operator but the fact is there are more independent filling stations in these states than ever and no refinery has been abandoned because of state regulation. Independent producers in Oklahoma and Texas are the strongest adherents to state regulation and would resist any effort to rescind the laws.

"The Sharkey bill is the nearest approach to self-government under state control ever offered to any industry. The public is fully protected by the right of veto by the director of natural resources. The production of oil from its natural storage in the ground in greater volume than is required to meet the current demand is an unjustified waste. Equitable proration as contemplated in the Sharkey bill will assist the independent producers to remain in business. Ultimately all natural resources will be controlled through state or federal agencies.

"Economic conditions in the United States are deplorable and it is the duty of every industry to do its utmost toward the restoration of prosperity. Other great oil producing states have actually proven that through the aid of state regulation the petroleum industry can lead the way to better conditions. In view of their experience producers in other states are amazed at the opposition of the small group of California operators toward state regulation. California should adopt the Sharkey bill on May 3 and stop the present ruinous competitive practices which are rapidly eliminating the small operator and contributing to the continued instability of business in general."

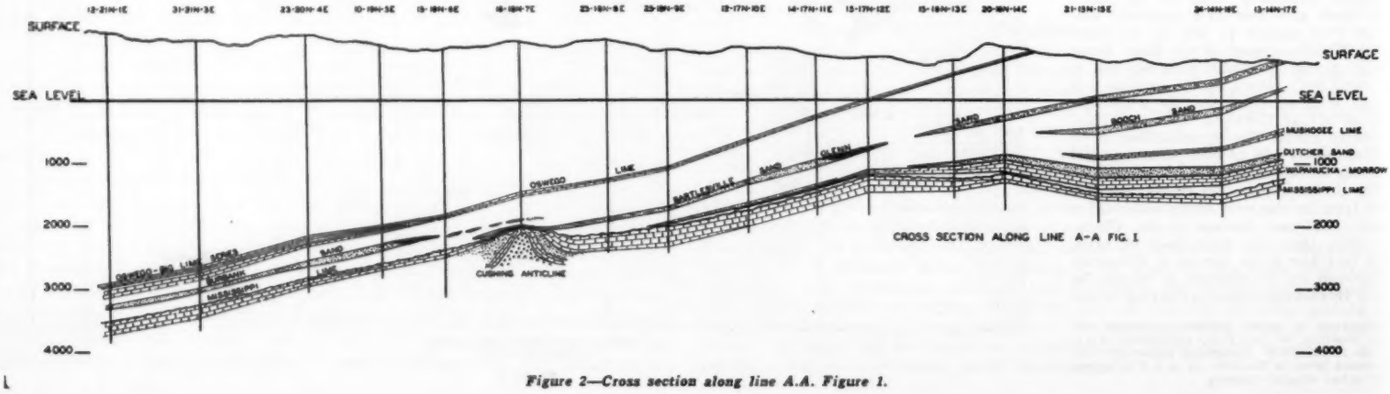


Figure 2—Cross section along line A.A. Figure 1.

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Bottom Hole Pressure Interpretations

Study of Data Secured in the East Texas Oil Field Permits Better Understanding of Reservoir Conditions

By E. V. Foran
Fort Worth, Tex.*

Among the more important aspects of the development of the East Texas oil field to date is the observation and determination of the bottom hole pressures. While the subsurface or bottom hole pressures are now somewhat common to many pools, the East Texas Pool is the first case in which this type of work has been carried on simultaneously with development from the early stages of the field.

The first work in subsurface pressure determinations was made during May and June, 1931, and was confined to a rather restricted area, but by August 15 sufficient data was obtained in the different parts of the pool to establish a definite trend of the physical changes to which the producing reservoir was subjected. The instruments used in this early type of work were of two types, one of which recorded pressures continuously and the other recording intermittently. The data obtained from such instruments would of course show both the relative and quantitative changes in pressures whenever periodic observations were made on the same well or in the same area. The bottom hole pressure when determined under conditions of shut-in equilibrium may be considered as equal to the maximum reservoir pressure existing within the normal drainage area of the well and is generally termed the reservoir pressure. Bottom hole pressures may also be determined while the wells are producing, in which case they may serve to indicate the productive ability of the wells under different known bottom hole conditions such as thin and thick pay sections and sands of high and low permeability. In this case the difference between the shut-in equilibrium pressure and the bottom hole flowing pressure for any observed rate of flow, serves as an index to the nature of one or more of the known bottom hole conditions mentioned above.

For general comparative purposes in discussing the subject of bottom hole pressures with respect to the pool as a whole, the time interval from June 1, 1931, to March 1, 1932, may be subdivided into three stages:

1. The period of unrestricted production or prior to August 17, 1931.
2. The readjustment period of restricted flow from September 5 to December 1, 1931.
3. The period of restricted productions from December 1, 1931, to March 1, 1932.

Period of Unrestricted Production

Although bottom hole pressure determinations were not made immediately upon discovery of the field nor until after some 250 or 300 wells were completed, nevertheless the observations during May and June in the outlying portions of the field indicated clearly that the initial reservoir pressure must have been not less than 1,650 pounds per square inch, corrected to a level of 3,300 feet subsea. All pressure data throughout the field has been corrected to this level in order to eliminate any differences in pressure which might be due to differences of elevation on the structure. In other words, the depth to which the pressure recording instruments are lowered into the well is a factor of the pressure existing at these depths. A condition of true pressure equilibrium in the reserve therefore permits higher pressures in the lower portions of the structure than exists at the same time in the higher portions of the structure.

Many of the pressure determinations made during June, July and August indicated unmistakably that areas of abnormally lower pressure were developing in those portions of the field from which heavy withdrawals of oil prevailed. As a result of unrestricted withdrawals in the Kilgore area during May and early in June, water made its appearance in a few of the wells which had penetrated deep into the pay and upon pinching in of these wells after the appearances of water was observed, it was noted then an abrupt rise in the bottom hole shut in pressures resulted.

This reaction indicated that continual abnormal withdrawals not only resulted in instituting a local water hazard but also indicated the inability of the reservoir to maintain subsurface pressures of the necessary order for the best interests of the pool.

However, there prevailed prior to August 17, a great many other abnormal withdrawals in concentrated areas which were adjacent to shut-in and partly shut-in wells as well as wholly undeveloped areas. As a result of this condition many subsurface physical changes were taking place which could be determined only through the observation of bottom hole pressures.

Although the period prior to August 17 would be considered very early in the life of the field, nevertheless the range of subsurface pressures at this time varied from a maximum of more than 1,600 pounds per square inch in the West Joiner area as against pressures of less than 800 pounds in the East Joiner area.

A somewhat similar condition prevailed in other areas although not nearly to such extremes. As a result of the practices of the period of unrestricted production there were therefore set up many local areas having relatively higher and lower reserve pressures adjacent to each other. Under such conditions it is obvious that the prevailing direction of drainage would be from the areas of higher pressure to those of lower pressure, the magnitude of the drainage depending upon the differences in pressure existing between the areas and the distances between the areas themselves.

Since these conditions existed in the early development of the pool it indicated that some immediate regulation was necessary for the protection of the undeveloped reserve against the premature depletion of the reservoir energy. Pending the necessary procedure to bring a state of orderly development and production about, the entire pool was shut in on August 17, 1931, and reopened on September 5, 1931.

Readjustment Period

On September 5, 1931, the pool was reopened and production was allotted on a basis of 225 bbls. per well to each and every well in the field regardless of its acreage or position with respect to other wells. This new situation being in such sharp contrast to that of the preceeding period, it would be natural to expect subsurface pressure readjustments and changes commensurate with the changes taking place with respect to the new order of drainage. Also it might be expected that during the period of complete shutdown, the tendency of the subsurface pressures would be toward a new equilibrium.

Upon actual observations and examinations by means of bottom hole pressure instruments a marked rise in reservoir pressure was noted in the areas which had shown low or subnormal pressures just prior to the shutdown. The East Kilgore area, the East Joiner area, the Lanthrop area, and the Gladewater area all showed considerable recovery of pressure above that which existed prior to the shutdown. Any rise in the pressure in these areas during the shut-down period must have been accomplished by a transfer of oil and gas from the higher pressured areas adjacent.

The process of the subsurface pressures seeking a new equilibrium following the shutdown continued until as late as the middle of October. These major underground changes indicated that a condition of primary and secondary drainage prevails. The primary drainage may be considered as the drainage of the oil through its normal path of least resistance at the nearest well. While this process is going on with respect to all of the individual wells, there is also the slow but certain transfer of oil and gas reserves from the sparsely drilled areas to those of the more densely drilled areas.

While this condition represents a marked improvement over the period of unrestricted production, it still permits rather high inequalities of reservoir pressure to exist in various parts of the pool. As a whole the pressure conditions in the pool during November were far more uniform than those of the unrestricted period, but at the same time there were many cases of local disturbance which could not be absorbed during the readjustment period since the drainage during this period was directly proportional to the drilling density in the different portions of the field. Thus any densely drilled local area of the field might drain at several times the rate of an equal adjacent area which may have only a few producing wells.

Period of Restricted Production

During this period the per well allowable production varied from 125 bbls. to 75 bbls. daily. This resulted in a more proportionate drainage throughout the field as a whole than existed during the previous three months period and is reflected as such in the bottom hole pressure observations made during this period. While it is true that there was a drop in pressure throughout the field during this period it was of a much lower magnitude than that of the previous period. At the same time the drainage or production from the densely drilled areas was reduced while new drainage became effective in the newly drilled areas which during the former period were undeveloped reserves. Due to the fact that the displacement of the reservoir contents by water can take place only from the west side of the field it is natural to expect the higher pressured areas of the field to exist in these areas and the lower pressured areas to prevail in the extreme east side of the field. This is actually the case and will normally remain so throughout the life of the field.

It is also of interest to note that in those areas where the reservoir pressure falls below 900 pounds per square inch more than 90 per cent of the wells are required to pump their production. The natural deficiency of gas in this pool requires that the highest possible order of pressure maintenance be maintained if long flowing life of the wells is desired. By February 1, 1932, the only areas of the field having pressures above 1,525 pounds per square inch were limited to the West Gladewater area and the Smith County area. Under the present restricted production the pool has shown a higher ability to maintain the subsurface pressures than during any of the periods of the past, this being due to two reasons, a fixed restricted withdrawal for the entire pool and a more proportionate drainage due to the progressive development of the undrilled areas.

Summary

Summarized, the interpretation of the bottom hole pressure data in the East Texas Field to date indicates the following:

1. The producing horizon is very sensitive to high differentials in reservoir pressure which may develop or exist as a result of moderate disproportionate drainage of prolonged duration, between nearby wells or areas, or highly disproportionate drainage existing between similar areas during a short period of time.

2. The water head which is effective on the west side of the field is the principal natural agency tending to maintain reservoir pressures through displacement of the withdrawn contents.

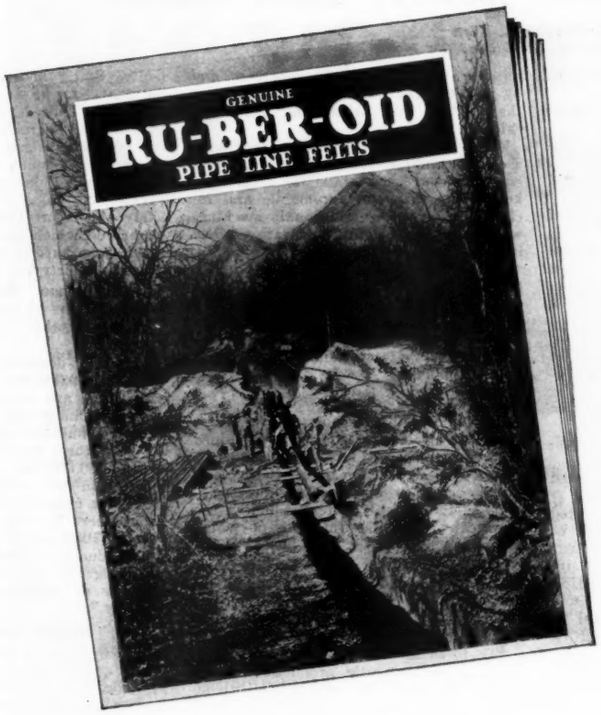
3. The rapid decline in reservoir pressure prior to the period of restricted production is an indicator of the inability of the water to properly function as an agency of natural pressure maintenance except under conditions of proportionate and restricted withdrawals.

4. The inability of the average well to continue flowing when reservoir pressures fall below 800 to 900 pounds per square inch.

*Before Southwestern District, A.P.I. Division of Production, Tyler, Tex., April 14.

GASOLINE LOADING RACK IN EAST TEXAS

Humble Oil & Refining Co.'s four-car gasoline loading rack at New London in Rusk County, Texas. Gasoline from the company's casinghead gasoline plant, nearby, is shipped from this rack.



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Senate Committee Holds Oil Hearing

Judge Ames Presents Argument for American Petroleum Institute; Wirt Franklin Opposing. Industry's Losses Featured

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Apr. 18.—No industry has brought more witnesses before the Senate Committee on Finance to contend for and against taxation of its products than the petroleum industry.

Representatives of the American Petroleum Institute in order to save time delegated Judge C. B. Ames of The Texas Company to present the argument against the proposed tax on lubricating oil and pipe lines.

Senator Tydings Opposes

Prior to the scheduled hearing on oil, Senator Millard E. Tydings of Maryland opposed any tax on imported petroleum on the ground that it would produce no revenue and as proposed amounted to 70 per cent ad valorem and because "we export more of these products than we import."

On the basis of the oils used by the Government it would have to pay an increased price of at least $8,400,000 every year—an addition to the deficit, he said.

Twenty major companies own 97 per cent of the oil in storage, he said, and the stored oil is 70 per cent of one year's supply. The $300,000,000 tribute on the public this measure imposes will go to those companies in unearned increase in inventory value, said Senator Tydings.

"No wonder they do not oppose this measure," he declared.

Judge Ames' Argument

Judge C. B. Ames of The Texas Company spoke at length in showing how heavily the oil industry is now taxed. He said the House bill with 4 cents per gallon on lubricating oil was supposed to yield $35,000,000, and he added:

"In the schedule submitted by the treasury for your consideration there is included (according to the press) an item of 1 cent a gallon on the domestic consumption of gasoline estimated to yield $165,000,000," and with $20,000,000 estimated yield on pipe line taxes, make a grand total of $220,000,000 or 22 per cent of the entire amount which it is proposed to raise by the emergency levies.

"This enormous burden upon an already overburdened industry is a threat which has aroused the entire oil industry," declared Judge Ames. "The American Petroleum Institute believes that it speaks the unanimous voice of the entire industry in opposing these taxes or any of them.

"When one industry in a great state like Texas pays 56.8 per cent of all the cost of state and local government, no further argument is needed to show that this industry is already overburdened with taxation, and Texas is typical."

Year of Losses

Judge Ames gave the committee a clear insight into the deplorable financial condition of the oil industry, illustrating with reports issued to April 1, 1932, as follows:

Amerada Petroleum Corp. with invested capital of $45,778,212, lost $1,701,648.

Atlantic Refining Co. invested capital of $190,889,723 showed profit of $516,453.

Barnsdall Oil Corp. with earnings adjusted for crude and refined oil stocks to lower of cost or market and with invested capital of $91,050,415, lost $3,332,727.

Buckeye Pipe Line Co. with invested capital of $25,331,724 showed a profit of $915,243.

Continental Oil Co. invested capital of $277,337,209, lost $10,683,313.

Empire Gas & Fuel Co. earnings adjusted for crude and refined oil stocks to lower of cost or market with invested capital of $215,105,968, lost $2,986,592.

Gulf Oil Corp. with invested capital of $599,940,431, lost $23,670,052.

Houston Oil Co. with invested capital of $58,449,971, lost $356,484.

Humble Oil & Refining Co. with invested capital of $283,023,766, showed a profit of $2,765,092.

Ohio Oil Co. earnings adjusted for crude and refined oil stocks to lower of cost or market, with invested capital of $367,952,707, lost $9,334,138.

Pacific Western Oil Corp. with invested capital of $21,120,475, lost $903,124.

Phillips Petroleum with invested capital of $241,467,506, lost $5,576,409.

Rio Grande Oil Co. with an invested capital of $51,268,357, lost $618,616.

Standard Oil Co. of Ohio with invested capital of $69,051,348, showed profit of $2,359,173.

Standard Oil Co. of Kansas with invested capital of $12,004,343, lost $618,616.

Sun Oil Co. with invested capital of $107,165,983 showed a profit of $3,107,147.

The Texas Corporation, invested capital of $653,401,809, lost $9,954,478.

Texas Pacific Coal & Oil Co., invested capital $35,806,417, lost $1,413,235.

Union Oil Co. of California earnings adjusted for crude etc., invested capital $327,174,803, lost $4,363,835

Simms Petroleum Co., invested capital $26,309,136, lost $2,651,222.

H. F. Wilcox Oil & Gas Co., invested capital $24,347,554, lost $1,069,783.

Skelly Oil Co., invested capital $83,272,811, lost $2,117,110.

Total of those listed shows that they have an invested capital of $3,807,250,668 and that their consolidated earnings showed a loss of $73,546,157 or 1.93 per cent.

Senator Couzens: "Do you know of any company that had any write-ups in these capital accounts?"

Mr. Ames: "There are some companies which at one time wrote up discovery value when they found producing oil on a lease which had cost them little or nothing. That is not true of the principal companies here. It is not true of The Texas Company, which never wrote up a cent for discovery value or anything else."

Gasoline Tax's Effect

Referring to gasoline taxes, Judge Ames said:

"It is rather significant that the states in which the gasoline consumption is declining are the states where the tax is high.

"Another thing to bear in mind in considering whether you are going to impose any additional burden on this industry is the prospect for the future. The industry estimates a sharp decline in consumption of gasoline this year."

He cited automotive registrations to show a probable decline in gasoline consumption. Tax evasion was another deplorable development which had burdened the oil companies with a handicap. Of the tax on lubricating oil he said.

"The petroleum industry had no opportunity for a hearing before the House Committee on the tax on lubricating oil. That was put in after the hearings closed."

Judge Ames read from Successful Farming to illustrate the interest in farmers in lubricating oil and gasoline. Forty-two per cent of the entire nation's automobiles are owned by farmers and by people living in country towns of less than 1,000 population, the statement said.

"The city market begins and ends with the automobile as far as the average consumer is concerned, while the farm market begins with the automobile and includes a score of additional machines which require constant lubrication when in use," the statement added.

Judge Ames told the committee industry is using lubricating oil at 8 to 12 cents a gallon and he supposed when the House Committee put a tax of 4 cents a gallon on it they had in mind lubricating oil at service stations selling for 25 cents a gallon.

Wirt Franklin Urges Tax

Wirt Franklin, president of the Independent Petroleum Association, explained that the subject of his remarks had been approved by resolution by all the oil and gas associations and marketing associations in the United States, including the American Petroleum Institute of which he was a member of the board of directors.

Combating statements that the farmers would pay more for their gasoline and oil and were opposed to any tax on imports, Mr. Franklin said:

"There is no interest so vitally interested in the domestic production of oil as is the farmer. He owns one-eighth of all the oil produced."

Mr. Franklin referred to Russia and Canada as sources of cheap oil and products that threatened the American oil industry in addition to the large and cheap production from Venezuela. He cited deliveries in Baltimore and Detroit of gasoline from Russia.

Replying to a question by Senator Barkley, Mr. Franklin said:

"The tax of 1 cent a gallon will not keep out any oil from importation. The Tariff Commission having found that the difference in cost of production here and abroad is $1.03 a barrel, how in the world could a tax of 42 cents a barrel, which is only about 40 per cent of the difference in cost, keep out any oil?"

Referring to a statement that 10 years ago the importers of oil reduced their imports of Mexican oil as a voluntary assistance to the domestic oil producers, Mr. Franklin said:

"From 1922 on, because the production from Mexico declined, they did reduce imports, and they would not again resume on a large scale until they developed Venezuela. Then they commenced their imports again, and they have steadily increased them until last year, when a reduction took place through the intervention of Secretary Lamont of the Department of Commerce to bring about a ratable importation compared as nearly as possible with the curtailment of production in the oil-producing states.

"Congressman Nelson said our curtailment in the United States had been only a little over 5 per cent. However, the actual curtailment of the oil fields in the United States, the fields of flush production, has been about 98 per cent of their potential production. Kettleman Hills, Oklahoma City, Oklahoma, and East Texas have been producing during the last year not to exceed 2 per cent of their potential production."

Denies Overproduction

Again when Senator Barkley asked about oil production in comparing conditions 10 years ago and today, Mr. Franklin declared:

"You have heard a great deal about overproduction of oil in the United States. As a matter of fact, there has not been an overproduction of oil in the United States in the last 13 years. During that time there have been imported into the United States 1,010,000,000 bbls. of oil. During that period the United States lacked 686,000,000 bbls. of producing as much oil as it consumed. That resulted in excessive storage of 341,000,000 bbls. of American oil, due solely to importations, and that is the storage oil which you hear so much about which is a burden on the American petroleum industry.

"Congressman Nelson said all the troubles of the oil industry were internal, and I offer this in refutation of that statement.

"In 1930 domestic oil production was reduced 109,000,000 bbls. as compared with 1929, and during the same period there was imported 105,000,000 bbls. of oil which nullified our curtailment. During 1930 there was taken out of storage over 23,000,000 bbls. of oil to supply the demand in the United States, and in 1931 that curtailment continued so that we produced in 1931 48,000,000 bbls. less than in 1930, while the imports in 1931 were reduced to 86,000,000 bbls., again nullifying the efforts of domestic oil in the way of stabilizing the domestic oil industry."

Exports and Imports

Senator Hull, reciting figures showing excess of oil exports over imports, Mr. Franklin explained that the bulk of the exports from the United States were from the Pacific seaboard to Asia and the Orient. Also a large part of our exports go to Canada. But there would be found a large excess of imports over exports from the Atlantic Coast. There was also a great difference between these exports and imports. Exports from the Atlantic Coast were of Pennsylvania grade lubricating oil and imports are gasoline and fuel oil which displaces oil produced in the United States. Again replying to Senator Hull, Mr. Franklin said:

"Our export market is lost. It has been declining for three years and in the last year we lost as compared with the preceding year 21 per cent of our exports."

Senator Hull: "A country that sees us run our tariffs up will run theirs up, if not against one item we are trying to sell them then against another."

"The depression in the oil industry commenced three years ago," Mr. Franklin said. "We were up here two years ago asking for protection, which we did not get, and we predicted this condition would be brought about if we did not get the protection. This depression in the oil industry occurred prior to the general depression and had a great deal to do with bringing about the depression generally in the United States, because we are purchasing from the eastern states and from these very New England states which now deny to us the protection which they have always enjoyed."

Pan American Co. View

Paul H. Harwood, vice president of the Pan American Petroleum & Transport Co., declared that a tariff on oil was unprecedented and contended that the measure before the committee was pure tariff legislation.

The Federal Oil Conservation Board, Mr. Harwood said, has reported that the United States Government uses in peace times 20,000,000 bbls. of all oils every year. The government of the United States, he added, buys in the open market.

"If prices increase by the amount of the tariff," said Mr. Harwood, "our government will pay higher prices like the rest of us. Then this would increase our governmental deficit."

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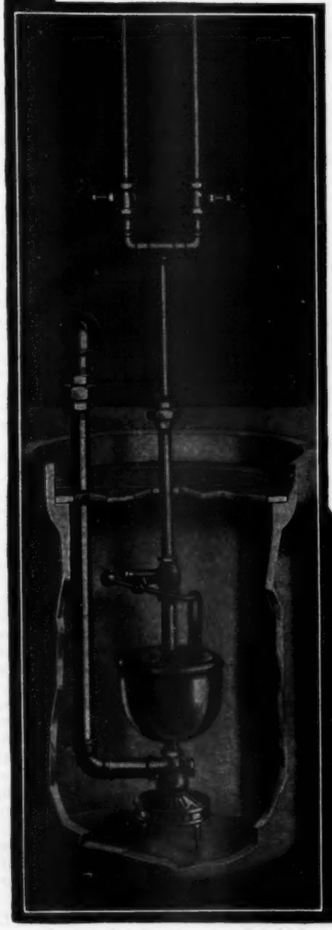

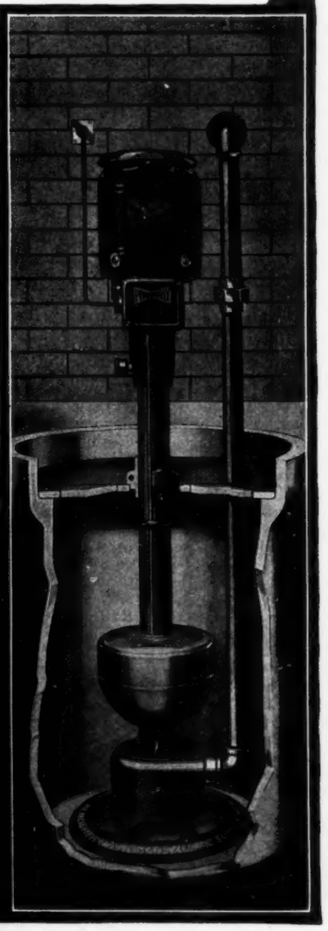

PENBERTHY INJECTOR COMPANY DETROIT

Preventing East Texas Paraffin Trouble

Methods for Removal of Depositions Suggested. Theories as to Manner of Accumulation. Characteristics Analyzed and Principles Outlined

By W. T. Doherty and R. C. Buchan
Petroleum Engineers, Humble Oil & Refining Co.*

Paraffin. The word itself from past production experience, implies trouble and increased operating costs. The congealing action of East Texas crude when spread over the surface of the ground or equipment indicates that trouble similar to that encountered in the Panhandle, Crane County and other fields would have to be dealt with. The accumulation of paraffin in tubing and tanks during the summer and fall of 1931 caused many operators in East Texas to expect the same problems in overcoming paraffin. In spite of the apparent forecast of trouble, paraffin has caused a comparatively small amount of inconvenience, due to the fact that causes of the depositions, although not fully understood, were lessened by some change in production methods and handling of the oil produced.

It is generally more economical to prevent paraffin depositions than it is to let them accumulate and have to remove them. The manipulation of production practices and methods of handling production in such ways as to prevent trouble are worth while from every standpoint. By utilizing the natural gas pressure and the bottom hole temperature (average 145° F.) to the fullest extent possible, the degree of paraffin troubles can be minimized and in most cases completely eliminated. With a better understanding of the character and reasons for paraffin depositions, the operators should be able to avoid considerable expense that usually follows paraffin accumulation.

Location and Extent of Accumulations

Paraffin accumulations might be experienced in any equipment through which the oil is moved, but deposits have been mainly in tubing and tanks, with occasional troublesome deposits in lines and gas traps.

Sounds have been run on measuring line in numerous wells to determine the extent of the paraffin depositions in wells flowing which have been adjusted to make the daily allowable production over a 24-hour period. Paraffin was found in "bridges" approximately 10 feet in length between the surface to 750 feet below the surface. The amount and extent varied in various wells, but no paraffin was found in wells from which the production was taken in a few hours.

Several lead lines were broken out and paraffin was found only in thin layers, about one-thirty-second inch thick, on the metal. Stagnant areas though, such as bull plugs in lead lines, were full of loose, mealy paraffin. One lead line that was of particular interest had been laid between two small hills in such a manner that the oil remained in the pipe after the line was put out of service and at inspection, after 30 days, paraffin was found at the open ends where the oil contacted the air. The only other evidence of paraffin was a thin layer on the inner surface of the pipe and the oil itself was as fluid as normal crude, indicating that it is necessary that the lighter fractions pass off, before paraffin precipitation takes place, due to supersaturation.

Most of the paraffin reported in gas separators was no doubt that which works loose in tubing and collects in the gas separators. It is possible that some paraffin forms as a layer on top of the oil when the pressure is released to atmosphere and settles to the bottom when the stagnant oil is agitated by a renewed flow through the trap. If pressure is maintained on trap while well is shut in further paraffin precipitation will be prevented.

*Before spring meeting, southwestern district, A.P.I. Division of Production, at Tyler, Tex., April 14.

The accumulation of paraffin in tanks has caused the most trouble and expense.

The rate of accumulation was watched in six tanks in the Kilgore area in which the wells were flowing on choke over a 24-hour period. Table 1 gives an idea of this rate, which indicates an average of one-half inch for each tank that was run.

TABLE 1

First Inspection

Tank No.	Days in service	Tanks run	Inches sediment
1	8	3	0
2	15	7	4
3	19	9	4
4	23	11	5
5	31	17	6
*6	28	15	12

Second Inspection

Tank No.	Days in service	Tanks run	Inches sediment
1	28	11	9
2	32	13	7
3	38	16	7
4	42	18	8
5	50	17	9

*A new well was run into the tank when brought in, probably causing an acceleration of the deposition due to the presence of traces of water and mud.

In areas in which production is made in a few hours the rate of accumulation in tanks is considerably less. Two tanks were checked and the bottom was found to be increasing at an average of 2 inches in 30 days, or only about one-eighth inch per tank of oil run. This accumulation is of the same general nature and will in time necessitate an expensive tank cleaning job.

Methods Used to Remove Deposits

Two general methods have been utilized to remove paraffin; namely, mechanical and chemical. The mechanical methods constitute putting the precipitated paraffin in a semistable suspension in oil with subsequent removal with mechanical scrapers. Claims are being made that most chemicals, so-called paraffin solvents, act to stabilize the original or redissolved paraffin solutions.

In order to remove paraffin, it must be put back into solution or it must be made semiliquid so that it may be moved as a liquid.

Tubing Deposits

Various methods of cleaning tubing on flowing wells have been used rather successfully in East Texas. The use of gas pressure and the bottom hole temperature of the oil makes this a comparatively easy job.

The simplest method would be that of flowing through the casing long enough to warm up the tubing. The warmed paraffin is then flushed out by flowing through the tubing at a high rate. This method is contradictory to the Texas Railroad Commission's regulations and can not be used at the present time.

Different kinds of paraffin knives and scrapers run on a bailing line through an oil saver, have been used to remove depositions which could not be removed by opening up and flushing out the tubing. This is an effective method and can be made much easier by putting a solvent into the tubing before the cleaning is started. One of the successful solvents used for this work is gas oil, which can be purchased at low cost from any refinery.

One operator had the following experience on a particular well that had been flowing on a 24-hour schedule and had ceased to flow, due to paraffin. During eight hours that were spent trying to penetrate the accumulation using a knife and three joints of polished rods, only 30 feet was penetrated. Twenty gallons of gas oil was poured into the tubing. The knife then went through 700 feet of paraffin in one and one-half hours. A swab was then run successfully, and the well was put back on production. After going through each 100 feet the knife was withdrawn and found to be clean, whereas, before using the gas oil it was filled with paraffin in which condition it acted only as would a solid bar.

Use of Chemicals

Various chemicals have been used by producers to remove deposits in tubing with varying amounts of success. An amount, usually 5 to 10 gallons, of chemical is poured into the tubing and the well allowed to remain shut in for a period of approximately 12 hours. When the well is opened up the softened deposits are flushed out. The success of this treatment depends on the extent of the accumulation and has been insufficient in some cases; and often the cost of such a procedure is not commensurate with the results obtained.

One operator has claimed unusual success with chemicals which were lubricated into the casing. A small amount used daily has not only increased the tubing and casing pressure and increased the rate of flow through a given size choke, but has arrested the accumulation in stock tanks.

Removing Accumulations

Paraffin that has accumulated in tank bottoms should be removed or serious consequences may result; first, it is impossible to thief or gauge a tank accurately. Second, large lumps of paraffin might be washed loose by flow of incoming production and plug pipe lines. It is necessary to remove paraffin before any of the possible remedies for prevention of accumulation will be successful. The most common methods used for removing bottoms employ removing b.s. plate and scraping with hand tools, or steaming in various ways.

Scraping

To scrape out the bottom the b.s. plate is taken off and by the use of hand tools, which must necessarily be made of nonsparking material, the paraffin is raked into a small sump. After fluxing the paraffin with an equal amount of fresh crude, the mixture is pumped to the burning pit. Labor costs and the value of the oil burned make this an expensive practice.

Steaming

Heating East Texas crude is a bad practice under any conditions because, although paraffin might be put back into solution, it will precipitate the second time at a higher temperature. This is in direct contrast to Panhandle crude in which heating causes a more stable solution and a lowering of the congealing temperature. Steam coils in the bottom of tanks would, therefore, more than likely defeat their own purpose.

Live steam has been used in the following ways: (1) Melting the bottom and flowing the liquid paraffin to the burning pit; (2) heating all the oil in a tank which contains high bottom in an effort to redissolve the paraffin in the tank of oil; and (3) heating the bottom with an equal volume of crude and mixing this hot liquid with oil by filling the tank with more crude. These methods, although effective, are objectionable because of (1) cost of steam equipment and labor to operate, (2) danger of cutting oil, and (3) failure of paraffin to stay in solution. Following are descriptions and results of using the various methods.

Methods and Results

A bottom can be melted and bled from the tank by applying steam through an open 2-inch bleeder line in the line and heating to 150° F. but from 1 or 2 inches of paraffin remains which will not gravitate from the tank and must be removed by taking off the b.s. plate.

A full tank of oil having a 12-inch solid paraffin bottom was steamed through a bleeder line. The temperature did not rise high enough to melt the paraffin or redissolve it. The steam emulsified the oil. The emulsion settled out and had to be bled off before the rest of the tank could be run. This is wasteful and proved to be ineffective in so far as the tank had to be cleaned by removing the b.s. plate.

Cleaning tanks with steam and combinations of steam and chemicals has also been tried in the following manner: A foot of production is run into the tank containing a high paraffin bottom. The chemical is dumped in and the complete contents are warmed and agitated by steaming through a 2-inch bleeder line. When the contents of the tank reaches approximately 140° F. the paraffin is in solution in the oil and production is then run into the tank. Heating the bottoms with steam and running with the tank of oil does not seem to be effective method of cleaning since the paraffin is not kept in solution and settles back to bottom. The danger of cutting the oil is a decided disadvantage, but various chemicals might be used to prevent emulsification.

In general, the use of steam for tank cleaning is highly impractical when costs, nature of the paraffin bottoms and other previously enumerated factors are considered.

Gas Agitation

Some operators tried to use the principle of gas agitation to remove paraffin bottoms, but found it to be almost impossible to break the paraffin loose, due to extreme adherence and the fact that gas channels leaving major portion intact on bottom.

No paraffin trouble has been experienced in lines and traps except in rare cases. Some separators have been equipped with a 2-inch blowoff line in the bottom, but their use has not been necessary for removing paraffin accumulations.

Methods Used in Preventing Deposits

Even before the advent of the military shutdown of the East Texas Field, it was a practice among many producers to pinch in wells in order that they would make a certain amount of production in a 24-hour period. Paraffin deposits were beginning to show up in some wells that flowed as much as 300 bbls. per day, or 12.5 bbls. per hour. As the prorated allowable was cut down the deposition of paraffin became more pronounced. The critical point was not determined, but it was evident that the wells must be flowed at higher rates so that paraffin would not be deposited in the tubing. Intermittent flow or taking the allowable in short periods of time is no doubt the best method of obtaining production to insure a clean string of tubing. Not only is a flushing action and a higher temperature obtained, but no appreciable increase in the gas-oil ratio results. Nor do the beneficial results of this temperature increase and flushing action stop in the tubing; higher rates of flow through lead lines and separators serve to keep them clean.

Gas-Rolling

Gas agitation as mentioned above is used by several operators to prevent the paraffin from accumulating in tanks. A spider made of perforated pipe connected to a gas line from the separator is laid on the bottom of the tank. The oil is rolled as the tank is filled, causing any paraffin in the bottom to be dispersed and probably partially dissolved or suspended in the oil. The b.s. plate was removed on several tanks in which this system had been used for about 90 days. No paraffin was found above the spider.

Such a system depends on (1) sufficient gas pressure to roll; (2) constant application is necessary to make it ef-

fective; (3) tanks must be allowed to stand in order that the gravity and gauge may be taken correctly; but the system is giving good results wherever the practice is allowed by the pipe line companies.

Recycling Bottoms

The installing of a pump at a battery of tanks to pull the oil left in the tank by the pipe line, and put it into a tank that is filling has been used with entirely satisfactory results; but the initial cost and the necessity of having power at hand makes this installation costly.

Use of Water

Water in the bottom of tanks gives a flexbile bottom and eliminates the formation of a hard paraffin accumulation. Since this method is cheap it has been tried and used with success. The tendency for an emulsion to form is prevalent where fresh water is used, due to agitation of inflowing oil, but by adding 1 per cent salt or oil treating chemicals to the water, this is prevented. With this method there is a gradual deposit above the water of soft and mealy paraffin which shows a tendency to hold water in suspension on cold days. It was found that tanks with a water bottom that had been in service for five months contained an average of 2 inches of this soft mealy paraffin above the water layer. Some of the water was lost after having been held in suspension and going out with the oil, but this loss is very slight and amounted to only five-hundredths of 1 per cent of the oil handled through the tank. The water used in these tanks was 1 per cent salt (sodium chloride) solution. By increasing the amount of salt the tendency to be held in suspension is less. During warmer weather this tendency decreases and the intermediate layer becomes less, due to the fact that summer heat causes a settling of the water.

If water is put into a tank the major consideration is the marketability of the oil in the tank. Since pipe line companies require 4 inches of clearance below their connection in the tank, the amount of water and the paraffin layer must give this clearance.

Theory of Paraffin Accumulations

Let us then note the characteristics of this oil with a thought of applying these principles to our production practices and our methods of handling the oil produced.

East Texas crude is classified as a purely paraffin base—high gasoline content, but has the usual characteristics of congealing rapidly on the surface even at moderate temperature after lighter fractions have evaporated. The evaluation shown in Table 2 does not give an indication of the peculiar property, but various other tests given below tend to disclose the reasons for this phenomena.

TABLE 2

	Per cent
Gasoline	36.0
Kerosene	9.5
Gas oil	15.0
Light lub	9.5
Medium lub	6.0
Residuum	24.0
Total	100.0

Samples were prepared from the crude by distilling off different per cents of the lighter fractions of the oil. The residue oil from these distillations was divided into two parts. In one part of each of the samples a very small lump of paraffin, amounting to less than 1 per cent of the volume of oil, was added and the sample shaken to dissolve the paraffin. Table 3 shows the pour tests on these samples. The congealing temperatures shown are on air tight samples from which no evaporation can take place. After the pour tests were made and the samples were allowed to warm to room temperature, they were poured out on a glass plate to note the congealing while exposed to the air at 75° F.

TABLE 3

		Congealing temperature	
Sample	Per cent distilled off	Before adding paraffin ° F.	After adding paraffin ° F.
1	none	Below 15	Below 15
2	10	Below 15	30
3	20	26	46
4	25	34	54
5	30	48	60

As the amount of lighter ends that are evaporated is increased the congealing temperature is raised and in the presence of excess paraffin the congealing temperature is even higher. In so far as evaporation takes place from the surface, only a comparatively small volume must vaporize to result in a paraffin layer. No practical measure can be given for the surface congealing since this starts almost immediately and the thickness per unit of time depends on the temperature and amount of evaporation from the surface.

Tests on Heating

To explain the reason heating East Texas crude does not stabilize the paraffin solution by redissolving the paraffin, the following tests were conducted in the laboratory. Several samples of crude were centrifuged and an average of 0.5 per cent of paraffin was precipitated. This sediment was put back into solution by warming the contents of the stoppered centrifuge tube to 110°-120° F. and shaking to redissolve the paraffin. On centrifuging the second time the amount of sediment was increased to 1 to 2 per cent. These tests indicate that heat has a detrimental effect since it evidently disturbs the equilibrium of the paraffin solution or changes the solubility.

The paraffin deposited in tubing is usually in the form of a hard mealy accumulation which is free of the lighter ends of the oil. The paraffin accumulation in tanks is viscous and hard enough so that a thief or gauge bob will not penetrate it.

A sample of this precipitated paraffin was observed under the microscope to determine its structure. The mass is composed mainly of amorphous wax with some plate crystals present. There is no evidence of the presence of needle crystals.

In all cases where oil is allowed to stand in such a way as to allow the gases or lighter ends to vaporize, a layer of paraffin forms on the surface of the fluid.

Causes of Depositions

All tests show that paraffin does not precipitate primarily from the body of the oil. Its sedimentation occurs after the gases and lighter ends evaporate.

This holds true to deposits in tubing. When the well is flowing on a small choke, with a high back pressure, a tendency to surge or alternately build up a gas head in the upper part of the tubing is prevalent. The fluid level rises and falls causing a wetting and drying of the tubing. This leads to an accumulative deposition of paraffin. As the oil and gas flow upward through the tubing, a point is reached, theoretically about 1,500 feet below the surface, where the oil is saturated and gas begins coming out of solution, resulting in a cooling effect, which is detrimental since it aids the paraffin deposition. Flowing a well wide open usually gives a lower gas-oil ratio than flowing on a very small choke, increases the temperature, and also the increased velocity of the oil is a beneficial flushing action. In other words, available information favors intermittent flow to relieve paraffin trouble in tubing, lead lines and traps.

The contents of Table 3 indicate that the presence of paraffin which was not in the original solution causes congealing to take place at a higher temperature. Paraffin which comes out of the oil is hard to redissolve and acts as a catalytic agent to hasten the deposition of more paraffin.

Gulf Coast Operators Have Hearing

Tell Railroad Commission Restrictions Applicable Elsewhere Not Practical There. Point to Curtailment Record

By Neil Williams

HOUSTON, Tex., Apr. 18.—That there is no definite set of rules or general type order for regulating production that can be applied to Gulf Coast fields was the claim made by coastal operators in a proration hearing before the State Railroad Commission at Houston April 15. At the hearing, coastal operators for the first time presented a solid front in their efforts to show that any such restrictions as enforced in other sections of the State not only would be disastrous and ruinous to coastal fields and fail to prevent waste but on the other hand would actually create waste.

In the past there has been no state-regulated proration in coastal fields, except at Refugio where uniform choking of wells to control gas production has been in force since March, 1931. It has been the practice of the Railroad Commission to apportion a maximum allowable for the entire Gulf Coast district, leaving the method of reducing the production to within the allowable up to the operators themselves. This, coastal operators have always been able to do. The original allowable set was 185,000 bbls. daily. This later was reduced to 140,000 bbls., the present maximum, and for several months coastal fields have been producing less than 110,000 bbls. daily, or at least 30,000 bbls. under the maximum.

The reduction of production on every occasion has been attained solely by curtailment of drilling rather than further closing in of wells, because, as testimony at the Houston hearing brought out, peculiarities of salt dome fields and hazardous and costly operations have taught coastal producers, even since before proration came into being, the necessity for the most efficient handling of wells, prevention of all waste and the procuring of the greatest ultimate recovery that profits might be realized.

Testimony at Hearing

The testimony at the hearing stressed the peculiarities of coastal fields as compared with fields in other parts of the State. First, all Gulf Coast wells have been determined by actual drilling to be individual problems within themselves, and the well is the sole unit of measure. This was brought out by Fred C. Sealey, assistant general manager of production of The Texas Company, South Texas division, and S. A. Judson, chief geologist of the Texas Gulf Producing Co., who presented the picture of typical salt dome fields, showing the Humble and Barbers Hill Domes in detail.

Second, all wells in the coast have been so produced as to net the operator the greatest amount of return over the life of the wells, and to accomplish this the operator has been compelled by experience and self-protection to adopt such mechanical devices as have for their purpose the regulation of the flow and the measure of the efficiency of the gas energy, and other methods of regulating production which tend to give the operator of the particular well the maximum ultimate oil recovery from any particular sand.

Third, the testimony introduced, as specific evidence in the case of the Barbers Hill and Humble Field, that drilling records definitely prove the sands encountered in one well may be entirely absent in the offset well, or that the characteristics of the sand in one well with respect to porosity, size of grains, water level and gravity of oil may be entirely different in the offset test, all of which is conclusive proof that a salt dome field is in fact a series of miniature fields flanking the dome. These miniature fields are composed of series of lenticular, unconsolidated or segmentary sands and irregular sections of sands, sandy shale and hard sand rock.

Individuality of Wells

Fourth, it was further illustrated by exhibits in the form of maps and charts that in the Piercement type of domes in particular that, even though at a considerable distance from the dome a common water drive or source exists, the individual producing sands each have an individual water level which has no direct relationship to the water level of an adjacent segment of productive formation.

Fifth, it was emphasized by the testimony of petroleum engineers, geologists and successful operators, both independents and representatives of major companies, that wells are now being produced on the Gulf Coast at a point of maximum efficiency, and that no physical waste exists in any field in the coast at this time, the operators having learned long ago that no well can be completed and produced without proper choke, balanced oil and gas ratio and a constant observance of the performance of the individual well during its life. Other testimony indicated that proper methods of producing wells originated in the coastal district are now being adopted throughout the country.

It also was brought out at the hearing that although market demand should become such that more oil should be required, coastal wells would not be opened any more than they are at present. Additional oil, it was explained, would be obtained solely by the drilling of more wells, the point being that even as there is a minimum to which a well can be pinched so there is a maximum at which the well can be opened, and the range between these extremes is very narrow.

Detailed evidence was presented that the use of improper chokes as a rule resulted in material damage and oft-times entire loss of wells. It was pointed out that any arbitrary set of rules or restrictions as to production would result in the use of improper chokes in most instances as the proper choke is governed by the individual wells, and even conditions in individual wells vary from day to day, necessitating constant alterating of chokes and producing methods.

Ben C. Belt, chief geologist of the Gulf Production Co., testified that if any general order at all were issued by the commission it would have to be extremely flexible and provide for immediate redress for operators in their attempt to maintain the greatest efficiency and conservation in each well. He, as well as all other witnesses, testified as to the correctness of the picture which previously had been presented showing the many peculiarities of formation and operation of salt dome fields.

Gulf Coast Record

In defense of the Gulf Coast's record in the statewide production curtailment program, statistics were introduced by Mr. Sealey in his testimony comparing the number of completions by years for the past three years on the Gulf Coast with completions of other areas. The figures, showing a decided decline in number of completions on the coast, follow:

	Completions		Producing wells completed	
	Total Texas	Total Coast	Total Texas	Total Coast
1929	6,636	1,229	3,464	775
1930	5,122	1,029	2,599	591
1931	5,620	474	4,272	218

To show that there is no waste in any of the coastal field, detailed reports of conditions of each field were filed with the commission.

Following the conclusion of the taking of testimony, members of the Railroad Commission made known they would not make a decision at this time but would take the matter under advisement.

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MEMBER AUDIT BUREAU OF CIRCULATIONS

REMOVE THE CAUSE.

The oil industry has been sick a long time. Hundreds of remedies have been suggested, most of them ignoring the primal cause of the trouble.

Ingeniously elaborated prescriptions have been offered and rough and tumble methods have been applied without assurance of permanent recovery because the seat of the disease remains untouched.

The industry is overwhelmed with too much oil and every effort is being made to control the flood, but what is being done to stop its source?

For two generations men hunted oil like wild game. It was regarded as the property of whoever captured it. Out of that conception has come all the troubles that beset the industry today.

It inspired a ceaseless search for oil and immediate necessity of producing it when found because offsets might rob the discoverer of his find.

That necessity was recognized in lease requirements compelling instant production regardless of the law of supply and demand.

Although the industry had more than enough oil in Seminole and Oklahoma City and elsewhere and any new discovery meant a further demoralization of the business a Rusk county wildcat started a race that opened the flood-gates in East Texas.

The State of Texas, the whole oil industry, was appalled at the waste and destruction that impended. Drastic, even desperate, measures had to be resorted to but not before vast damage had been done and immense losses suffered in every branch of the oil business and in every business or community affected by the condition of the oil industry and those engaged in it.

As a consequence the oil industry finds itself more and more entangled in regulation, more and more obliged to look for aid in ordering its affairs to political intervention.

There is but one way out. That is, as Earl Oliver points out in this issue of The Oil and Gas Journal, to get to the root of the trouble, correct the fundamental error in the legal status of oil.

The industry will never be secure from periods of demoralization from overproduction so long as that condition continues.

If the oil industry is ever to be stabilized and placed on a firm foundation it must be protected from these violent fluctuations that arise from the competitive race to produce regardless of consequences.

Oil, instead of being considered free game to whoever is able to capture it, must be given a legal status like any other property. The man who has oil on his property should not be at the mercy of his neighbor.

The industry should not be subject to all the shocks and demoralization fostered by an antiquated conception of oil development that is contrary to all modern knowledge and enormously wasteful of our national resources.

Oil producing states deriving their main revenue from oil should not be obliged to suffer the loss of millions in values depressed by the operation of iniquitous customs based on legal misapprehension.

The consuming public, in addition to being called upon to make up the losses in oil revenue by increased levies, shares the effects of the demoralization of business, additional taxation, and wasteful practices resulting from hasty overproduction incited by a mistaken law.

Mr. Oliver indicts that original cause by its manifest results: "The competitive race to extract; unfair division of oil and gas; vast duplication of developing, producing, transporting, refining and marketing facilities; inefficient, wasteful extraction; failure of the law of supply and demand to operate effectively, thereby causing chronic overproduction; and uncorrelated marketing—all resulting in high production and marketing costs, destructive sales competition and elimination of profits."

He suggests as a substitute for the "capture theory" regulation of oil and gas development and production that would have the same practical results as "ownership in place" strictly applied.

It would thus be possible to adjust output to market demand by letting surplus supplies rest in underground storage, thereby avoiding the excesses, extravagances and wastes inseparable from the present system through the capture theory putting a premium on immediate production.

Such a reversal of law and tradition is, of course, a tremendous task. The oil industry alone cannot hope to achieve it. But a continuance of the changing viewpoint of the industry on this aspect can be accelerated and should be. Oil men have had disastrous experience with the capture theory and its resultant evils. They are about ready to urge a change.

State governments have similarly been educated by dear cost in the fact that the problems of the oil industry react on the States. They need to be shown the fundamental weakness of the law that requires modernization.

The motive power in this campaign of education must begin with the oil industry although it cannot stop there. It must, to be effective, be extended through the scientific societies associated with the industry, through trade associations, commercial and civic organizations so that it may produce an understanding among the rank and file of the great consuming and voting public which, in the last analysis, must be convinced into approval and support.

There has been a remarkable change in popular attitude towards the oil business within the past decade. The industry is no longer condemned offhand and unheard. Thanks to the policy of taking the public into confidence and placing the cards on the table the oil industry has emerged from the cloud of suspicion and distrust that made it for so long a veritable Ishmael.

A state official or federal government can now speak a word for the oil industry without being howled down by mob prejudice. The country understands that the oil industry is a business like any other and entitled to fair consideration of its problems.

It can be shown, as Mr. Oliver shows, that the chief obstacle to stabilization of the oil industry is the law which puts a premium on wasteful and unjust practices. It can be shown that the change needed will be in the general interest, not only of those in the oil business, whether producers, refiners, marketers, royalty owners or stockholders, but in the interest of the public at large as consumers of petroleum products and taxpayers, by the elimination of the basic cause of the industry's troubles.

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BRADFORD, PA.

Plan to Stabilize Price of Gasoline

Marketers Have No Intention of Repeating Blunder Committed Last August, When Runaway Market Was Followed by Collapse

By W. T. Ziegenhain

Further advances were made in the gasoline and kerosene prices posted by Mid-Continent (Oklahoma) refiners during the past week. The rest of the market continued firm. Salesmanagers find that the program of "selling at a profit" has met with success as shown by their ability to advance prices, but they recognize the fallacy of allowing prices to go too high and they are already talking about stabilizing prices at some "reasonable" level. They realize that we have not yet reached a period of the year in which a material increase in gasoline consumption may be expected. In fact, a decrease from the consumption of a year ago is indicated by state tax returns and substantiating the estimate of the special economics committee of the American Petroleum Institute which showed a reduction in the gasoline consumption based on fewer car registrations monthly to July 1 of this year. Furthermore, exports have declined and imports of gasoline and crude have shown a substantial increase during the past two weeks.

These factors are recognized, but refiners are not so much concerned with these factors as they are with the possibility of increasing crude runs and the resuming of operations in shut down plants. They believe the key to the success of the refined oil market for the next two months lies in the ability of Mid-Continent refiners to hold crude runs to actual market demands and to hold prices to a "reasonable" level.

With the question of stabilizing gasoline and kerosene prices uppermost in their minds, refiners are giving attention also to prices on other products. While the rest of the list is firm and price advances may be expected, refiners prefer to make additional changes slowly. This applies particularly to fuel oil, gas oil and neutrals.

REFINED MARKET BAROMETER

General advances were posted in gasoline and kerosene prices within the past week, following the lead of Mid-Continent refiners a week ago. Strength was given the movement by the retail price advances posted in these commodities throughout practically all of the United States east of the Rocky Mountains. Fuel oils and lubricants also added strength but only minor price changes are recorded. Further increases in gasoline and fuel oil prices are expected along the East Coast and this possibility is strengthened by the larger number of export inquiries. The Gulf Coast market was also benefited by the better export movement. Wax prices remained unchanged but sellers in the East and in the Mid-Continent are moving toward the higher portion of the price range for quotations on deliveries over the future.

Mid-Continent—General advance in all grades of gasoline and kerosene. Low vapor pressure natural gasolines advanced while 26-70 grade remains unchanged. Fuel oils, gas oil and lubricants firm.

Atlantic Coast—Retail price advances on gasoline and kerosene supporting higher refinery prices and more favorable export business expected to push prices higher. Fuel oil and Diesel oils advanced 5 cents.

Chicago—Gasoline and kerosene strong following Standard of Indiana tank wagon advance. Jobbers' opinion divided over probable success of holding to present level of prices. Other products firm.

California—Gasoline was particularly strong with some improvement in fuel oil market. Lubricants remain unchanged.

Gulf Coast—Gasoline, kerosene and fuel oils advanced with neutral oil prices unchanged. Low priced lubricants available and threaten success of any effort to advance prices. Exports of all oils improve.

Pennsylvania—Gasoline, kerosene and light fuel oils advanced. Bright stocks, neutrals and wax in better demand.

Present Price Not Excessive

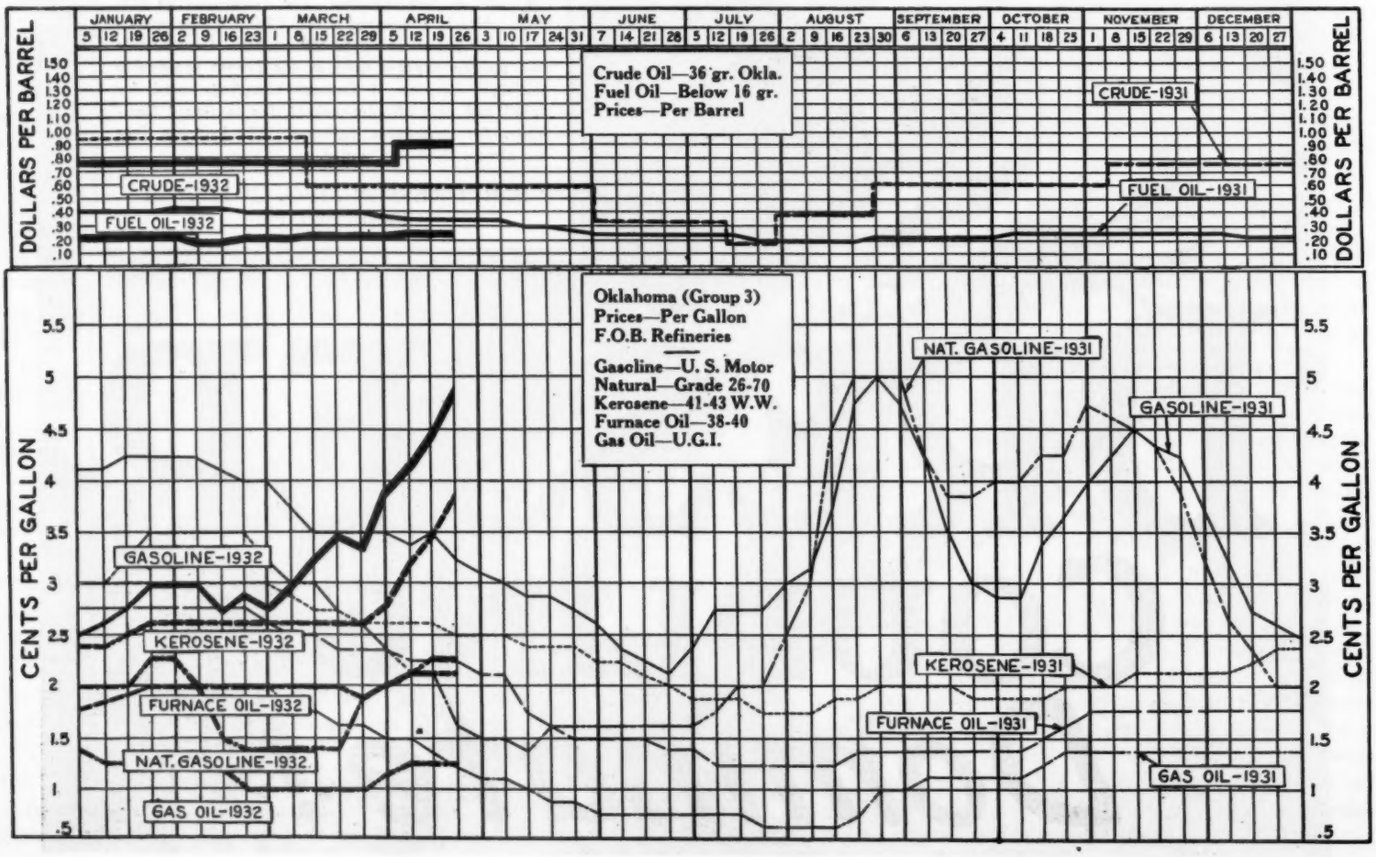
The U. S. Motor gasoline price in the Mid-Continent has shown an advance of better than 2 cents within six weeks and has reached a level higher than at any other time in the past 16 months with the exception of two weeks in August last year when the price reached 5 cents. Because there was a rapid rise last August to this 5-cent level and then a rapid drop to form a peak during this two-week period, some students of the market say they are fearful that the prices again will pass through such a course.

There are strong arguments in support of this view, but certain factors are operative now which were absent then. Last August the gasoline price was raised to 5 cents principally because crude prices had been advanced. That probably may be given as the principal reason for the present advance. However, the highest crude price in August was 62 cents a barrel for 36 gravity oil and the comparable price is 92 cents at present. This difference of 30 cents a barrel is sufficient to account for the fact that Mid-Continent refiners were adding to their crude runs to create new peaks for all time last fall, and are now holding crude runs to a very low level. In other words, 5-cent motor gasoline with 62-cent crude yields a very favorable operating profit, but 5-cent gasoline with 92-cent crude does not. April runs are scheduled at 419,750 bbls. daily while last August they were 590,545 bbls. daily.

Those who fear a drop in price as soon as the enthusiasm of the recent general crude advance subsides say that we are in a period of low gasoline consumption as against a period of high consumption last August. In answer to this the difference in crude runs may be cited, but a more important factor may be presented. At present we are facing a period of increasing consumption. Last August refiners faced a declining outlet and were willing to dump at the least sign of price recession. Another important change is seen as the result of the gradual strengthening of the determination to sell at a profit only, regardless of gallonage. The 1931 earnings statements of different refining companies are appearing weekly now and act as a constant reminder of the fallacy of selling for gallonage at a loss.

Gasoline

The U. S. Motor gasoline price in which no guarantee of octane rating is given



ranges between 4⅞ cents and 5¼ cents. Two brokers were known to hold gasoline which was purchased about a week ago at a much lower price and they threatened to undersell the present market, but the quantity is small. This situation is not unusual.

The most important development in the gasoline market during the past week aside from the price advance was the narrowing of the price differential among the gasolines of different octane guarantees. There was a tendency to lessen the premium on the high octane fuel compared to the low octane and a price spread of three-eighths cent was generally observed between the gasoline of no guaranteed antiknock value and that sold to have an octane number between 60 and 65. The U. S. Motor gasoline having an octane rating above 65 enjoyed a premium of three-fourths cent above the gasoline not bearing a guarantee.

Natural Gasolines

The price on 26-70 natural gasoline remained unchanged, but the attitude of manufacturers was greatly improved. They expect to see definite improvement in their market as the result of the better refinery gasoline prices. This is based on the present trend of prices in the superstabilized grades of natural which have been brought into competition with refinery gasoline. The 18-55 grade was generally traded at 3 to 3¼ cents and further price advances were expected. The special motor fuels stabilized to 11 and 12 pounds vapor pressure were also quoted at prices above those of a week ago.

Natural gasoline manufacturers have definitely entered the motor fuel market with their stabilized product and have become an important factor in the spot market. Estimates of 500 cars of this fuel have been given as the monthly output of natural gasoline manufacturers and this quantity will increase if no other outlet is found for natural gasoline itself. Some concern is shown over the tendency of motor fuels made from natural gasoline to vapor lock in warm weather, but manufacturers have the same degree of flexibility in stabilizing from 16 pounds to 10 pounds vapor pressure as from 22 pounds to 16 pounds as now commonly practiced.

Kerosene

Kerosene again proved a feature. The demand for the 41 grade continued strong and prices were advanced to 3⅞ cents as the minimum. Several important refiners were purchasing kerosene on the spot market and they paid up to 4⅛ cents. Refiners were generally holding their 41 gravity low sulphur kerosene for 4¼ cents. The 42 gravity low sulphur kerosene was actively traded as high as 4½ cents.

The demand for kerosene has been favorable from the standpoint of volume and at the same time, there has been a substantial drop in production. This demand has come from agricultural centers and not from exporters so price changes are not expected to be violent as at times in the past.

Fuel Oils and Gas Oil

Although fuel oils and gas oil show no change in price, they are being traded in with more care on the part of the seller and unless a boost in crude runs occurs in the immediate future, this market stands a chance of advancing. Warmer weather has naturally lessened the need for fuel oil and furnace oils so this must be recognized. In addition, warmer weather permits a wider choice of fuels with respect to cold test and since high cold test fuels are always available at relatively low prices, the entire fuel market suffers as warm weather is approached.

Lubricants and Wax

The market for lubricants brings the Mid-Continent refiners in more direct competition with refiners of other areas than any other group of products. Because of this, lub oil prices do not change with changing conditions in the Mid-Continent alone as might be expected of say gasoline and fuel oil. Because 15-cent motor oils have found a rather definite place in the retail market throughout the Middle West, price has been an all-important factor in purchases. Refiners have succeeded in raising bright stock prices, however, and this has tended to add firmness to the neutral market. Any sustained increase in demand could cause an increase in neutral prices.

Wax is more firmly held by refiners than in the past few months. While the export market has fallen off greatly and the domestic market has been limited by the lesser general industrial activity prices for wax in the East have shown improvement and the Mid-Continent refiners have felt justified in holding their 124-126 a.m.p. wax for 1¾ to 2 cents in bags or barrels.

Cylinder Stocks

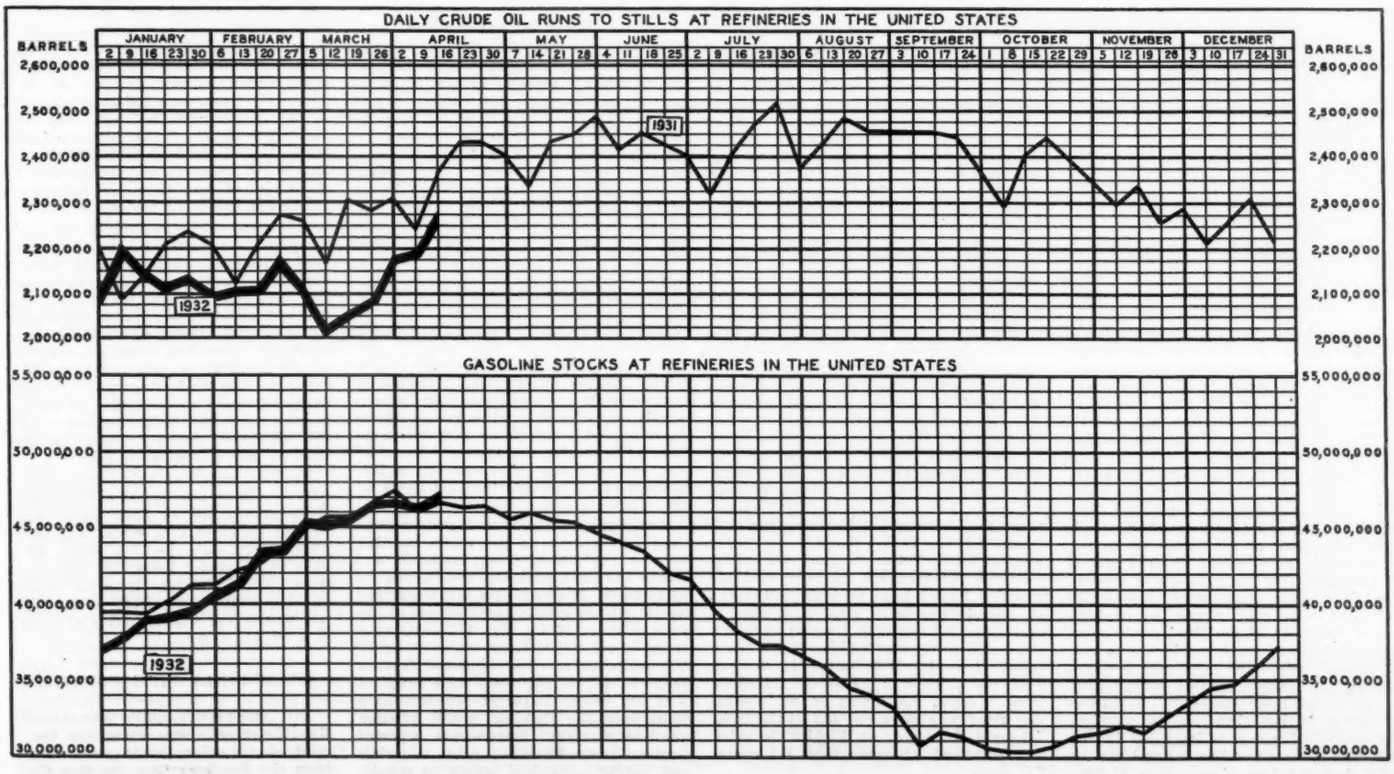
Cylinder stock prices have remained relatively low over the past year due principally to the ease with which new refiners in the Oklahoma City Field could make good colored products from Oklahoma City crude. Within the past month, the demand for Oklahoma City residuum has increased but in fact, this demand was for a special grade and when purchased by other refiners was for use in making into cylinder stock and bright stocks. The output of Oklahoma City crude oil residuum is practically limited to the production of the Oklahoma City refineries and in all cases these plants are relatively small. Other Oklahoma refiners run large quantities of Oklahoma City oil but this is usually as a pipe line delivery mixed with crudes of other fields and it has not been found possible in all cases to economically handle them separately. Purchases of residuum have been made for tank car delivery and in one case at least, large quantities of the residuum has been contracted for over a period of six months for pipe line delivery to an Oklahoma refinery along with Oklahoma City crude exclusively. Thus, with the removal of the possibility of excess production of green cylinder stock in the Oklahoma City refineries marketers believe a greatly improved prive level is in store for cylinder stocks.

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to still, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending April 16:

	Week ending April 16				Week ending April 9, 1932				Week ending April 11, 1931			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	444,600	6,959,000	5,432,000	100.0	447,700	7,295,000	5,454,000	100.0	423,000	9,176,000	7,706,000
Appalachian	91.8	93,300	1,803,000	1,110,000	91.8	84,100	1,861,000	1,082,000	93.8	87,300	1,897,000	1,184,000
Indiana, Illinois, Kentucky	98.9	318,100	6,659,000	4,166,000	98.9	321,600	6,658,000	4,137,000	97.5	299,400	6,067,000	3,173,000
Oklahoma, Kansas, Missouri	89.6	239,600	3,909,000	3,094,000	89.6	238,100	3,976,000	3,050,000	89.4	267,400	3,533,000	3,748,000
Texas	91.3	501,300	8,477,000	8,492,000	91.3	516,300	8,516,000	8,574,000	91.9	599,900	8,101,000	8,840,000
Louisiana and Arkansas	98.9	172,000	2,097,000	4,360,000	98.9	170,700	1,900,000	4,387,000	98.3	142,900	1,967,000	2,343,000
Rocky Mountain	89.4	32,300	1,974,000	635,000	89.4	31,300	1,986,000	631,000	93.1	56,700	1,923,000	832,000
California	96.7	471,400	14,855,000	96,585,000	96.7	483,300	14,929,000	96,206,000	98.8	494,600	14,104,000	99,012,000
Total United States	95.1	2,272,600	46,733,000	123,784,000	95.1	2,293,100	47,171,000	123,521,000	95.7	2,371,200	46,757,000	126,838,000
Texas Gulf Coast	99.8	379,100	6,882,000	5,762,000	99.8	401,600	7,016,000	5,920,000	100.0	455,400	6,933,000	6,509,000
Louisiana Gulf Coast	100.0	121,000	1,957,000	3,699,000	100.0	120,000	1,773,000	3,727,000	100.0	87,600	1,782,000	1,325,000

(1) Per cent refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) gas and fuel oil stocks.



All data based on weekly reports of the American Petroleum Institute. Figures for last week not shown in graph but are included in above table.

Prices at Higher Level in Chicago Area

Good Motoring Weather Important Factor. Kerosene, Distillates and Fuel Oils Also Display Strength at Better Postings

By Robert C. Conine
Chicago Bureau, The Oil and Gas Journal, 6 North Michigan Ave.

CHICAGO, Apr. 18.—Whether there will be a sag in the gasoline markets toward the end of this week when the jobbers take a breathing spell behind filled storage depends entirely upon the weather. Jobbers, it is frankly admitted, did not expect victory for the crude oil producers and Mid-Continent refiners, so that the general tank wagon and service station advances which followed the boost in the price of crude oil took these buyers by surprise with the result that since Thursday of last week jobber buying has acted to move the gasoline markets upward sharply to a point where it is now feared that advances are being made too rapidly. The special naphtha markets, which include cleaners' naphtha, lacquer diluent, rubber solvent, Stoddard solvent, petroleum thinner and V.M.&P. naphtha, are being held in abeyance until two major refiners increase their prices to meet recent advances in these products. Although there is somewhat less activity in the kerosene markets, prices are holding considerably higher than last week when the postings were moved up a quarter of a cent to a range of 3⅜ to 3½ cents for the 41-43 water white material and 3½ to 3⅝ cents for the 42-44 water white kerosene. Kerosenes advanced a full half cent this week. Distillates and fuel oils also showed strength and higher prices in spite of adverse seasonal considerations. Petroleum coke is unchanged in price and little of the fuel is moving.

Interest in Chicago district oil trade circles last week, naturally, was centered upon the price increases posted by the various companies in the gasoline tank wagon and service station markets. Sinclair Refining Co. led with a 1-cent advance in the gasoline and kerosene retail markets and was followed promptly by The Texas Company, Barnsdall Oil Co., Phillips Petroleum Co., and later by Deep Rock Oil Corp., Shell Petroleum Corp., Wadhams Oil Co., and Standard Oil Co. (Indiana), in this area and throughout the territory. The advance of Standard Oil Co., however, did not include the kerosene tank wagon markets. The kerosene market betterment was restricted to the normalizing of various points in the territory.

Situation in Kansas

Standard Oil Co. of Indiana's upward revision in the tank wagon and service station price of gasoline was general throughout the territory with the exception of Kansas. In this state one point, Cheney, was advanced from 13.8 to 14.1 cents on the Red Crown, and the Kansas City postings were made to conform with the Kansas City, Mo., markets, an advance of 1 cent. Elsewhere in the state price cutting conditions were such that nothing more could be done than to advance the price at all points where the third grade was selling from below 8 cents to 8 cents, leaving those at 8 cents and above alone. There were between 160 and 170 cities and towns in Kansas where the price of the third grade gasoline was below 8 cents, not including tax. At several points the price was 5 cents. Among the various causes contributing to the unfavorable marketing conditions in Kansas is that of gasoline tax evasion, the extent of which is indicated in the fact that Kansas gasoline tax receipts for 1931 showed a drop of more than $1,000,000. Trackage station operators and other price cutters, however, have advanced their postings 1 cent in Chicago district, although they remain from 1 to 2 cents below the price of the major companies.

More Buying on Spot Market

The general upward revision of 1 cent in the service station and tank wagon markets has lessened the advantage of the contracts which offer marginal guarantees below 6 cents. Where jobbers were buying before the general advance at prices of 3.56 cents on the 6-cent spread, 4.06 cents on the 5.5-cent spread, 4.31 cents on the 5.25-cent spread, and 4.56 cents on the 5-cent spread, the prices today on these contracts are, respectively, 4.56, 5.06, 5.31 and 5.56 cents. The ruling spot market prices are 4⅝ to 4¾ cents on the low octane specifications gasoline and three-eighths of a cent higher on the middle octane grade. The high octane grade is another quarter of a cent higher. At least one refiner departed from the general practice of gasoline producers and quoted material on a flat price basis for delivery over April. The price is understood to have been 4⅝ cents. Other refiners who failed to read the sign aright may be revealed.

Weather Favorable

If weather conditions continue unchanged there is little doubt but that current gasoline prices will hold if they do not advance. Traffic on the Chicago streets has been heavy and it will not be long before picnics and week-ends at the Dunes and forest preserves will be in order. The condition of the soil is said to be favorable for working thus providing a good outlet for kerosene and the third grade gasoline. The splendid weather at this time anticipates by at least two weeks the usual beginning of the motoring season in the district and the fact that not many jobbers have storage facilities assuring them of a good supply ahead during a period of brisk demand, indicates that there is little likelihood of a letdown in jobber buying during the remainder of the month.

Tank Wagon and Service Station

With two exceptions the tank wagon and service station prices at the principal points in the Standard of Indiana territory listed in The Oil and Gas Journal were advanced 1 cent April 8 by the Standard Oil Co. The exceptions were Detroit, Mich., where the price of the regular grade remained 12.5 cents and the third grade 11.5 cents, including state tax of 3 cents, and Wichita, Kans., where the price of the regular grade remained at 13.9 cents, including 3-cent state tax. The advance throughout its midwest territory, which includes Nebraska as well as the other states in the Standard territory, by Sinclair Refining Co., included a 1-cent boost in the price of kerosene. The Standard, however, changed the kerosene tank wagon postings only at the points where they have been subnormal. Kerosene tank wagon price changes by Standard were as follows: At Quincy the price was advanced 2.5 cents from 6.4 cents, 8.9 cents; at Des Moines the price was advanced 1.3 cents from 8.1 cents, 9.4 cents; at Keokuk the price was advanced 3.3 cents from 6.1 cents, 9.4 cents; at Mankato the price was advanced 1.7 cents from 8.1 cents, 9.8 cents; at Detroit the price was advanced 1.7 cents from 9.1 cents, 10.8 cents; at South Bend the price was advanced 2.5 cents from 8.1 cents, 10.6 cents; at Springfield the price was advanced 1.6 cents from 7 cents, 8.6 cents; at St. Joseph the price was advanced 0.6 cents from 7.6 cents, 8.2 cents; at Wichita the price was advanced 1.8 cents from 6.1 cents, 7.9 cents.

Although the day has probably not arrived when crude oil is not available from various sources which have been behind in the matter of outlets, the attitude of officials in a position to control the production of crude oil in such fields as East Texas and Oklahoma City is making a favorable impression and the fears of runaway crude output which disturbed last year's markets are not being felt. Another strengthening factor is the adjustment that is being made in the gasoline markets outside of the territory, especially in Pennsylvania and Kentucky, where refiners have been directly in competition with sellers in Chicago district.

There are good indications that the decision of several major companies to advance their tank wagon and service station postings throughout the territory was based in a large measure on what progress these companies anticipated would be made in the campaign against gasoline tax evasion. Unscrupulous dealers, especially those blending inferior naphthas and unstabilized natural gasolines, will have a greater advantage under the new price structure. It is reported that an intensive drive against gasoline bootleggers is scheduled to begin this week. Preparations for the drive will include, it is said, reorganization of several of the committees engaged in the fight against tax evasion in the north central and midwest territory.

The more conservative operations of refiners are reflected in the stronger position of the distillates and fuel oils as well as the betterment in the gasoline and kerosene markets. Good distillates and fuel oils are scarce as most of the refiners are turning a large part of their output into antiknock gasoline by cracking. While the improvement in the gasolines can be ascribed in part to seasonal considerations, the same can not be said for the heating materials. Contracts on heating oils were made public today and show considerably higher top prices.

Gasoline Tank Car Markets

Several refiners in Chicago district have practically withdrawn from the low octane gasoline markets by posting prices as high as 5¼ cents. The ruling markets on the low octane U. S. Motor gasoline are 4⅝ cents to 4¾ cents, representing an advance of half a cent from the low of last week. The 60-62 400 endpoint gasoline is quoted three-eighths of a cent higher than the low of last week at 4¾ to 4⅞ cents. Octane number as a selling point has evidently won the trade over in no small measure and there is hardly a trackage station which does not feature antiknock value along with the fact that their gasoline is uncolored. Gravity is still an important point in the northern sections of the territory, although it is practically discredited elsewhere. At one of the major companies last week it was admitted that the emphasis on antiknock value in the advertisements of competitors had begun to hurt their business seriously. As a result this company advanced the octane number of its gasoline from 58 to 64 on the regular grade.

Although the volume of high test gasolines is tapering as the warm weather invades the north, these materials are scarce and have advanced from an eighth to a quarter of a cent over last week. The 64-66 375 endpoint gasoline moved up from a range of 4⅝ and 4⅞ cents to a range of 4⅞ to 5⅛ cents, while the 68-70 360 endpoint gasoline advanced from a range of 4⅞ to 5⅛ cents to a range of 5 to 5¼ cents. Important changes have come into the fighting grade aviation gasoline markets. Buyers are reported turning away from cut price materials and buying recognized brands at considerably higher prices. One refiner has moved up the price of this gasoline to 7½ cents f.o.b. Louisiana plant, and another major posts this as his Group 3 price. The range this week in this aviation gasoline is 5⅞ to 7½ cents, and advance from last week's range of 5⅝ to 5⅞ cents.

Naphtha Tank Car Markets

The naphtha tank car markets were expected to advance at least a quarter of a cent a gallon throughout the list, but the delay of two major sellers in this and the Ohio territory to meet earlier advances of the majority of naphtha marketers is holding up the price boost. It is reported that marketers in the East, including Pennsylvania, are advancing their naphtha postings a full cent today and this may have the effect of bringing all sellers in the Chicago district into line. Blending naphtha, 50-52 gravity, 450 endpoint, advanced a quarter of a cent along with the gasoline markets.

Kerosene Tank Car Markets

The kerosene tank car markets continued to advance strongly this week and Monday were three-quarters of a cent above the low of two weeks ago. The advance this week was from a range of 3⅜ to 3½ cents to a range of 3⅝ to 4⅛ cents for the 41-43 water white material, and from a range of 3½ to 3⅝ cents to a range of 4 and 4¼ cents for the 42-44 water white kerosene.

Heating Oils

Following a report that one of the major companies today would announce the addition of two oils to its list with prices somewhat lower on all heating oils, Hughes Oil Co., Saturday announced the following schedule of prices: No. 1, light straw, 160°-170° flash, zero and sweet odor with 40 viscosity at 100° F., 6 cents spot price and 7½ cents top on contract; No. 2, pale red, 175°-190° flash, zero and sweet odor with 45 viscosity at 100° F., 5½ cents and 7-cent top; No. 3, dark, 175°-210° F. flash, zero and good odor with 50 viscosity at 100° F., 4¾ cents and 6¼-cent top; No. 4, dark, 175°-225° flash, zero and good odor with 75-125 viscosity at 100° F., 4¼ cents and 5¼-cent top; No. 5, dark, good odor, zero, 175°-250° flash, 90-105 viscosity at 100° F., 4 cents and 5-cent top. On quantities of less than 150 gallons the prices are half a cent higher.

Materials and prices which the major company is expected to announce today are as follows: No. 1, 36-38 gravity, 160°-170° flash, 40 viscosity, sweet odor and light color, 6 cents on quantities of 100 gallons or more; No. 2, 30-36 gravity, 175°-190° flash, 45 viscosity, sweet odor, red color, 5½ cents on quantities of 150 gallons or more; No. 3, 16-20 gravity, 175°-210° flash, 50 viscosity, dark, 4¾ cents on quantities of 400 gallons or more; No. 4, 12-16 gravity, 175°-250° flash, 105 viscosity, 4 cents on quantities of 800 gallons or more.

Fuel oil tank car prices advanced as follows: 22-26 gravity, 35 to 37½ cents; 18-22 gravity, 30 to 32½ cents; below 18 gravity, 25 to 27½ cents. The ranges were: 22-26, 32½ to 37½ cents; 18-22, 27½ to 30 cents; below 18, 22½ to 25 cents. The 28-30 zero remained at 52½ to 57½ cents. The 38-40 straw distillate was selling a little higher at a range of 2 to 2¼ cents.

CALIFORNIA PIPE CONTRACT

YOUNGSTOWN, Ohio, Apr. 18.—The Republic Steel Corp. announces the receipt of an order for 88 miles of pipe from the Southern Counties Gas Co. of California, involving about $500,000.

East Coast Refiners Advance Gasoline

Refinery, Tank Wagon and Service Station Prices Half Cent Higher. Bunker "C" and Diesel Oil Advanced at Principal U. S. Gulf Ports

By A. E. Mockler
New York Bureau, The Oil and Gas Journal, Suite 2803, No. 19 Rector Street

NEW YORK, Apr. 18.—East Coast refiners have lined up behind the band wagon and joined the march toward higher levels for refined prices, and the outlook indicates the probability of further upward price revisions. Effective Saturday, Standard Oil Co. of New Jersey has announced an advance of one-half cent per gallon in refinery, tank wagon and service station gasoline prices throughout its territory, with the exception of Delaware, and other major interests are joining in the advance.

The New Jersey company also took the initiative in a further markup in heavy oil prices during the week. Effective April 14, bunker "C" and Diesel oil quotations were advanced 5 cents per barrel at Louisiana Gulf ports and effective the following day the same increase was made applicable at all Texas ports. These advances bring the market up to 55 cents per barrel for bunker "C" and $1.20 for Diesel oil at these ports. East Coast port quotations were not changed, but the markets are working into firmer position, and an early advance would not surprise the trade.

While the statistical position of the markets has been steadily improving, there is a noticeable tendency on the part of major interests to "make haste slowly" in the direction of higher prices. The general tendency appears to be to "pace" the market and to avoid any advance which cannot be maintained.

Refinery Gasoline

A strong market prevailed throughout the past week, and demand was active. Jobbers anticipated the price advance and were filling their storage to capacity to take advantage of the old price levels.

While temperatures hovered below spring levels during the greater part of the week, the weather was clear, and motor fuel consumption was running into surprisingly large totals in many parts of the territory.

Although the half-cent advance applies on both gasoline of below 65 octane number and that taking the higher ratings, it is expected that the market will not fully reflect the advance until the latter part of the week, when smaller marketers are expected to fall into line and meet the increases initiated by major interests.

The New York State barge canal system was opened to navigation during the week, and this led to some trading in the barge market. Gasoline in barge lots, generally, sells at about a half-cent per gallon under the going price for tank car deliveries, and it is understood that some business was closed late in the week, for nearby shipment, at 5¾ cents per gallon at terminals.

There was a substantial pickup in receipts of California gasoline during the past week, and marketers in East Coast territory are looking for a well-sustained movement of the Pacific Coast product during the next few months, one independent marketer having contracted for several cargoes which will be laid down at Baltimore, Philadelphia and Providence.

Operators in the cargo market report a distinctly stronger tone in both Gulf Coast and California markets.

Tank Wagon Gasoline

Effective Saturday, tank wagon and service station quotations were advanced one-half cent per gallon throughout Standard Oil Co. of New Jersey territory, with the exception of Delaware, and other companies are following the increase initiated by the New Jersey company.

Marketers, through a series of local advances during recent weeks, have restored markets throughout the territory to a fairly uniform level, and if present conditions continue the East Coast retail market will go into the summer season on a firmer basis than for several years past.

The strong tank car market has narrowed the margins of independent marketers, and the "buckers" among the independent stations, who have consistently undercut the market for established brands for the past few years, are closer to the general posted level now than for a long time past.

The question of gasoline bootlegging is coming in for close attention in East Coast territory and reports agree that substantial progress has been made in restricting the operations of the bootleggers.

Kerosene

Although refiners have not advanced their quotations, the market is in somewhat better position, reflecting the increases in quotations for gasoline and other refined products.

The posted price for 41-43 water white in tank car lots continues unchanged at 5½ cents per gallon, and refiners are doing 5¼ cents on competitive trading. Kerosene holdings are not excessive, and a higher refinery market is anticipated in the near future.

Pending the development of a higher refinery price basis, the tank wagon kerosene market price remains unchanged in this territory. Marketers report a well-sustained demand, and are anticipating satisfactory gallonage totals for the spring season.

Fuel Oil

Featuring the market were the advances of 5 cents per barrel named at Gulf Coast ports during the week. The new price for bunker "C" at the Gulf is 55 cents per barrel. This leaves a differential of but 10 cents per barrel between the Gulf and Atlantic Coast posted prices, an abnormally narrow spread, and has led to the belief that prices in this area are due for a further mark-up in the near future.

The posted price at Philadelphia continues 70 cents per barrel, 5 cents over the level maintained at other East Coast ports, but pending action on the part of refiners at other ports in meeting this figure, sellers at Philadelphia are being forced to shade their quotations 5 cents per barrel to meet competition.

Furnace Oils

Refinery movement of furnace oils was along routine lines during the week, and quotations were unchanged at 4 cents per gallon for 32-36 oil and 5 cents per gallon for 36-40 oil, in tank car lots, f.o.b. Bayonne.

Tank wagon furnace oil prices were also without change during the period, marketers reporting a well-sustained demand.

Diesel Oil

With Gulf Coast prices up 5 cents per barrel, at $1.20, the East Coast posted price is now but 10 cents per barrel over the Gulf level. Thus far in 1932, Diesel oil has not been advanced in this territory, although bunker oil has been marked up 5 cents per barrel.

Shore demand for Diesel oil was fairly active during the past week, and the market remained in steady position.

Gas Oil

Thus far the "official" price for 28-30 gas oil has not reflected the recent advance in bunker "C" oil prices, but an actual increase has been made in that sellers who were formerly booking spot business at 3½ cents, or lower, are now generally firm at the posted level of 4 cents per gallon in tank car lots. Although the major marketers are now firm at the latter price, scattered business has been placed at 3¾ cents.

Daylight saving becomes effective throughout the greater part of the East next week, and this is expected to be reflected by a falling off in gas oil demand on the part of the large utility companies.

Lubs

Jobbing demand for cylinder oils was along broader lines during the week, and the market was showing a steady undertone. Buyers are still showing a tendency to limit purchases to prompt requirements, however, and sellers are looking for a continuance of this hand-to-mouth buying throughout the motoring season.

Volume in the industrial lub oil market has fallen off sharply in a number of lines, particularly the textile field, and contract withdrawals are not coming up to expectations. No price changes are reported in this group.

Wax

The paraffin wax market disclosed no new features of general interest this week, and prices remained unchanged on all melting points.

Domestic demand continues rather slack, and while more inquiries for wax for shipment abroad have been received, the amount of actual new business developed in the export market has been rather light.

Petrolatum

The outstanding feature of this branch of the minor products market has been the weakening tendency shown by the higher grades, which had been showing a fairly firm undertone.

Cream was quoted this week at 4⅝ cents per pound, lily white at 5⅝ cents, and snow white at 6⅝ cents per pound, reductions of one-eighth cent per pound in each instance. Quotations on other grades were unchanged.

Spot demand was rather light, but a fair contract movement continued.

Gulf Export Market

Stronger sentiment developed in the export market during the week, reflecting the increase at domestic refining centers. Kerosene was quoted higher at 4¼ cents per gallon for prime and 4⅜ cents per gallon for water white at the Gulf. Gasoline export prices were unchanged, but a firmer undertone was in evidence, and fractional price increases were looked for.

Activity in Mexican and Venezuelan crude markets continued light during the week, and leading factors in these markets continue using their shipping terminals to capacity, getting out their own shipments to the United States, in preparation for a possible tariff levy on such imports.

Reports from Rumania indicate that transportation difficulties are causing refiners in that country some concern. The present capacity of the railroads and pipe line to Constanza, the export port, are taxed to the utmost, and Rumania will not be able to largely increase her exports until additional transportation facilities are available. Prices quoted on refined products for export, f.o.b. Constanza, on April 2, remained unchanged from those quoted in last week's Oil and Gas Journal.

Petroleum Exports

Shipments of refined products into export channels were again down to routine levels during the week ended April 9, following the rather heavy movement of the previous week. Inquiries on the spot position were fairly active, however, and the expectation of higher price levels was reflected in some increase in buying for prompt and nearby shipment. All of the business reported, however, was in small lots, no cargo fixtures being reported.

The following table shows refined petroleum exports from the port of New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Apr. 9	Apr. 2	Mar. 26
Gasoline	45,000	70,000	205,000
Naphtha	60,000	161,000	255,000
Kerosene	15,000	74,000	32,000
Fuel oil	25,000	5,000	275,000
Lubricating oil	975,000	3,450,000	2,500,000
Petroleum, ref'd	235,000	320,000	352,000
	Pounds		
Petrolatum			12,000
Paraffin wax	1,370,000	1,050,000	1,135,000
Refined		118,000	120,000
Scale		455,000	980,000
Lub. grease	550,000	175,000	800,000

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended April 9 totaled 2,342,000 bbls., a daily average of 334,571 bbls., compared with 4,321,000 bbls., a daily average of 617,286 bbls. for the week ended April 2, and a daily average of 338,161 bbls. for the month of March. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast Ports—	
Baltimore	399,000
Boston	75,000
New York	1,004,000
Philadelphia	169,000
Others	195,000
Total	1,842,000
Daily average	263,143
At Gulf Coast Ports—	
Galveston district	63,000
New Orleans and Baton Rouge	397,000
Tampa	40,000
Total	500,000
Daily average	71,428
At all United States Ports—	
Total	2,342,000
Daily average	334,571
Daily average March	338,161

Distribution of total imports for the week ended April 9 follows:

Crude	1,240,000
Gasoline	484,000
Gas oil	100,000
Fuel oil	518,000

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf ports during the week ended April 9 totaled 435,000 bbls., a daily average of 62,143 bbls., compared with 47,000 bbls., or 6,714 bbls. daily, in the previous week and a daily average of 7,581 bbls. for March. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast Ports—	
Baltimore	35,000
New York	325,000
Others	75,000
Total	435,000
Daily average	62,143
At Gulf Coast Ports—	
All ports	None
At Atlantic and Gulf Coast Ports—	
Total	435,000
Daily average	62,143
Daily average March	7,581

Distribution of total receipts for the week ended April 9 follows:

Gasoline	435,000

Shipments of California refined products for Atlantic and Gulf Coast ports reported last week were as follows:

For New York, 96,900 bbls. of gasoline on the Royal Arrow (Standard Oil Co. of New York).

For Philadelphia, 117,000 bbls. of gasoline on the Southern Sun (Sun Oil Co.).

Brief Items for Petroleum Refiners

Wood River Refinery Of White Star to Be Operated by Lubrite

CHICAGO, Apr. 15.—As an additional development in the reorganization of the middle west operations of the Vacuum Oil Co., Inc., the operation of the Wood River, Ill., refinery of the White Star Refining Co. has been taken over by the Lubrite Refining Co. of St. Louis, Mo. Both the Lubrite and White Star companies are subsidiaries of the Vacuum company. The Lubrite company centers its refining and marketing activities in the St. Louis area and the White Star in Detroit. Under the new arrangement all the refining and marketing operations which have been under the name of the White Star in the St. Louis area are taken over by the Lubrite company.

The White Star refinery at Wood River has a crude oil capacity of 5,500 bbls. daily. It is located about 20 miles from East St. Louis where the Lubrite company has a 3,500 bbl. refinery. The two plants will be operated under the gtneral management of the Lubrite company of which H. T. Ashton is president. The company has greatly increased its distribution in the St. Louis area over the past year and has outlets for both plants.

It is understood here that the Standard Oil Co. of New York and the Vacuum Oil Co., Inc., which were merged last year into the Socony-Vacuum Corp., intend to reorganize all their subsidiary operations on the plan used in the case of the Lubrite and White Star companies. The Vacuum company also controls the Wadhams Oil Co. of Chicago with a refinery in East Chicago, Ind., operated under the name of the Bartles-Maguire Oil Co. with large jobbing companies through the Middle West. The White Eagle Oil Corp., with headquarters in Kansas City, Mo., is the Middle West subsidiary of the Standard Oil Co. of New York. It is understood that divisional headquarters will be established in Detroit, St. Louis, Chicago and Kansas City and all overlapping operations will be consolidated in the divisions.

ALBERTA GASOLINE TAX

CHATHAM, Ontario, Apr. 18.—A special committee of the Alberta legislature appointed to investigate the subject of gasoline taxation has recommended more stringent measures to check abuse of the tax refund privilege. An official will be placed in special charge of this business. A further recommendation is auditors and inspectors be engaged to investigate evasions, that assignments of refund claims be discontinued, and that all refunds be made direct and that the form used for claims be changed to comply with the Canada Evidence Act.

RAPID PROGRESS ON PLANT

CHATHAM, Ontario, Apr. 16.—Work on the new 1,000-bbl. cracking unit of the Northwest Stellarene Co. in Coutts, Alberta, is making rapid progress. The new unit, which is expected to be ready for operation by July 1, will cost around $50,000 and the process utilized will provide an outlet for fuel oil, the cracking reducing the fuel oil to a small residue.

UNION PACIFIC REFINERY

LOS ANGELES, Calif., Apr. 18.—Resumption of operations in the old Union Pacific refinery at Long Beach is scheduled within a few weeks, field reports indicate. The plant, listed at 2,000 bbls. a day capacity, has been acquired by Charles Fourl of the Monarch Refining Co. of Venice.

PURE BUILDS PLANT IN MIDLAND, MICH., FIELD

Alco Products, Inc., is building a 5,000-bbl. daily capacity refinery at Midland, Mich., for Pure Oil Co. The plant will cost between $500,000 and $750,000, it is reported. The plant will produce various naphtha or gasoline cuts, kerosenes, furnace and fuel oils. The fuel oil output will be taken by Dow Chemical Co. which has been using crude oil from the Midland Field in lieu of fuel oil. The refinery will be completed September 1. Details as to the marketing territory into which the output of this plant will be moved and other facts which might indicate the effects this plant may have in the Chicago district markets are to be made known later. Crude oil from this field has not been considered an important source of gasoline until now, being used chiefly for the production of special naphthas, or directly as a fuel.

INDIAN REFINING CO. ADDS CRACKING UNITS

CHICAGO, Apr. 16.—The Indian Refining Co. now has two cracking units under construction at its Lawrenceville, Ill., refinery. The new units will have a capacity of approximately 1,500 bbls. each. They will operate with topped crude. The units are of the de Florez furnace type and were designed by The Texas Company which has had a controlling stock interest in the Indian company for over a year. The equipment, installed by engineers of the Indian company, will be completed by July or August.

The Lawrenceville refinery of the Indian company has a crude oil capacity of 16,000 bbls. daily. The present cracking equipment consists of 9,000 bbls. daily of the Cross type.

EMPIRE ADDS REFORMER IN PONCA CITY PLANT

The Empire Oil & Refining Co. broke ground in the past week for a 2,000-bbl. reforming unit at its Ponca City, Okla., refinery. This unit will replace cracking equipment of the Doherty type which the company built nearly 10 years ago. The new unit will also be known as the Doherty type but changes have been made which will permit charging a light stock and the gasoline output will have a high octane value. All construction work will be carried out under the company's engineers and the job is expected to be completed early in July.

GIVES COURSE IN REFINING

The University of California (State University) extension division has announced a course in refining and utilization of petroleum products to be given beginning May 20. The course covers general principles of petroleum refining and methods of manufacturing lubricating oils and greases. The instructor is Martin J. Gavin, district manager of Foster Wheeler Corp.

HAS INTEREST IN MAPLE LEAF

CHATHAM, Ontario, Apr. 16.—In the course of testimony given before the Saskatchewan gasoline probe in Regina, W. D. Craig, former president and manager of the Maple Leaf refinery in Coutts, Alberta, stated that the Imperial Oil, Ltd., had an interest in the recent purchase of the refinery by Denver, Colo., men headed by John P. Akolt. He said $621,000 was paid for the assets, with a further payment of $18,000.

OIL CONCESSIONS ONCE REVOKED ARE RESTORED

NEW YORK, Apr. 18.—The supreme court of Argentina has restored oil concessions in Salta Province which were revoked in 1928 after being held since 1918 by the Standard Oil Co., La Compania de Petroleos Limitada, La Compania de Petroleos La Republica, and Compania La Lubrificantina. The concessions were granted originally by the intervenor of the Province of Salta, and revoked later by the provincial government on the ground that the intervenor had exceeded his authority in making the grants.

The ruling of the supreme court holds this annulling order to be illegal, and sustains the right of the intervenor to grant the concessions. During the 10-year life of the concession, the Standard Oil Co. is said to have spent 15,000,000 pesos in the construction of a refinery at Embarcion, pipe lines, storage and other facilities.

REFINERIES INCREASE OPERATING SCHEDULES

MUSKEGON, Mich., Apr. 18. — The schedules of the Naph-Sol and Old Dutch Refining companies, located here, have been increased to 35,000 bbls. each, or a total of 70,000 bbls., it was stated in connection with a proposed new railroad car-ferry service from Muskegon to Milwaukee and Manitowoc, Wis. This is an increase of 11,000 bbls., or about 19 per cent over aggregate runs for March which were 58,975 bbls. The Old Dutch ran 30,000 and the Naph-Sol 28,975 bbls.

Less than half of the crude required is obtained from 105 producing wells in the Muskegon Field now producing an average of 1,100 bbls. a day. The rest is obtained from Mount Pleasant wells in central Michigan by railroad tank car.

STANDARD NEGOTIATING FOR PAN AMERICAN

NEW YORK, Apr. 19.—The Standard of New Jersey is negotiating with the Pan American Petroleum & Transport Co. for acquisition of the latter's foreign properties. The deal involves approximately $100,000,000 in cash and stock.

The Pan American, a subsidiary of the Standard of Indiana, is a large producer of foreign crude through the Mexican Petroleum Co. in Mexico and the Lago Oil & Transport Co. in Venezuela. The company operates a 110,000-bbl. refinery in Aruba, Dutch West Indies. The Pan American also has a marketing subsidiary in England.

SUES TO RETAIN LICENSE

AUSTIN, Tex., Apr. 18.—Suit to enjoin State Comptroller George H. Sheppard from cancelling his license to manufacture and distribute gasoline and refined oil products was filed in district court by V. O. E. Wright of Dallas, operator of the V. O. E. Refining Co. of Gladewater. The petition alleged Sheppard ordered the license forfeited because the gas tax indebtedness of the company to the State had reduced the company's surety below the minimum.

MAGNOLIA PLANT FIRE

BEAUMONT, Tex., Apr. 18.—An explosion and fire at the gas plant of the Magnolia Petroleum Co.'s refinery here caused damage estimated at $250,000 and injured four men including A. E. Greve, assistant operator; T. L. Cruse, assistant operator; R. A. Kinnear, foreman; and H. Mulder, helper. A spark from an electric motor is blamed.

Ethyl Sales Effort Will Establish New Advertising Record

NEW YORK, Apr. 16.—The intensified co-operative advertising and sales drives on Ethyl Gasoline, scheduled for the week of April 29 to May 7, will witness the heaviest expenditure in advertising on record for publicizing any product during a period of similar length, it is indicated by reports to the Ethyl Gasoline Corp. headquarters here from licensee-refiners.

Counting duplication of Ethyl brands, 71 out of approximately 85 will be advertised with special display material ordered through the corporation. This special material, in most instances, will be used by licensee-refiners to supplement other forms of advertising, such as newspapers.

Commenting on the results of the corporation's proposal for the special campaign to its licensees, J. C. Taylor, sales-manager of the Ethyl Gasoline Corp. said: "We have just completed a report showing the extent to which our refining licensees will concentrate on sales of Ethyl Gasoline during the period of April 29 to May 7, both by means of advertising material ordered through us from the portfolio descriptive of the campaign, and also through special campaigns of their own utilizing such media as other novelty advertising, billboards, newspapers and radio. We have been gratified over the way our customers have entered into the campaign. Sixty-one of our licensees have ordered material from us, they representing 70 per cent of the total number and approximately the same percentage of our total Ethyl Gasoline business. Out of our list of 5,000 jobbers, 500 have ordered material, these jobbers representing 10 additional brands of Ethyl Gasoline not among those represented in orders placed by refining licensees. Thus a total of 71 brands will be advertised with material ordered through us."

Up to April 9, Mr. Taylor said, more than 7,459,500 pieces of the various types of postcard, banner, handbills, mats and other special display features developed by the Ethyl Gasoline Corp. for use in the campaign had been ordered, with additional orders still coming in.

"From frequent contacts with all of our customers," Mr. Taylor continued, "we have determined that in addition to those who have ordered advertising material, almost without exception the rest of our licensees are joining in the campaign through some other advertising media, either using their own copy in newspaper advertising, stressing Ethyl on radio programs, or putting out special Ethyl

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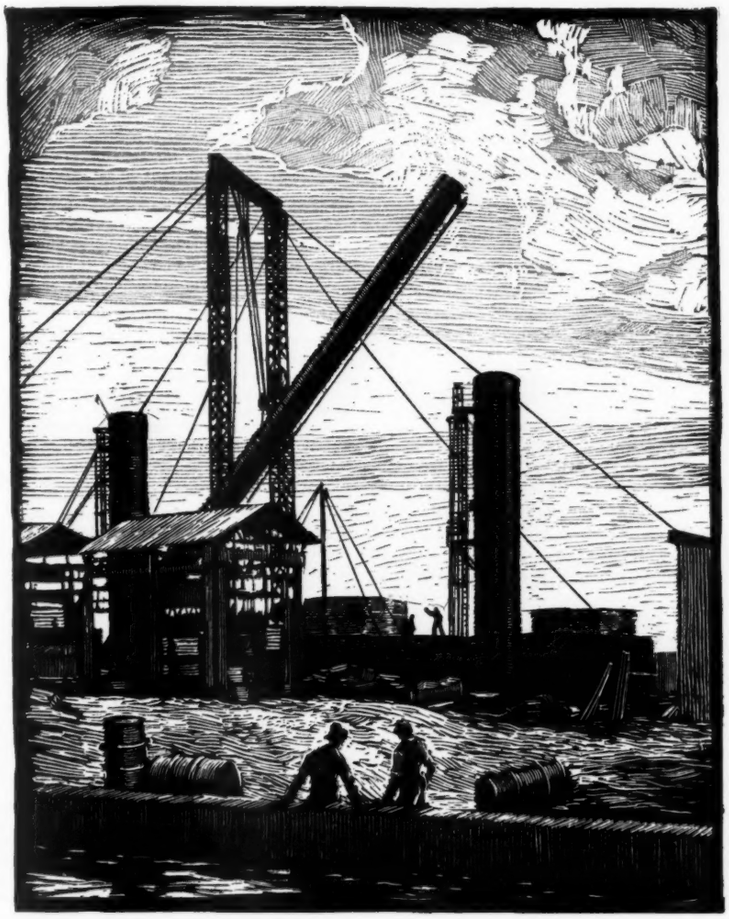
BELL REFINERY OPERATIONS

CHATHAM, Ontario, Apr. 16.—Bell Refining Co., which was organized last November, is making arrangements for the more extensive handling of the output of its refinery in the Manchester district of Calgary. The company was formed primarily as an outlet for the production of independent oil producers in the Turner Valley, and the refinery output is a vapor phase mineral treated gasoline containing more than 70 per cent Turner Valley naphtha. The plant has a maximum crude capacity of around 750 bbls. a day, and the company has its own tank cars and railroad spurs. Officers are: President, A. G. Spooner; vice president, R. A. Brown; managing director, Floyd J. Huff; secretary-treasurer, George Barber; directors, Clarence Snyder, Hal Morgan and Hiram Spooner; superintendent, M. T. Stevens.

Laboratory *and* Commercial Results *are correlated by Kellogg*



THOROUGH, intelligent laboratory analysis and tests are essential to the proper design of cracking and distillation units. This necessitates not only adequate equipment but also an experienced personnel.

During a period of years, the operating results of Kellogg-built cracking plants and pipe stills have been correlated with the laboratory work used as a basis for their design. This procedure has developed a thoroughly trained staff and has been the basis for building Kellogg laboratory equipment which is extremely flexible in its ability to duplicate commercial operating conditions.

Kellogg has not restricted its research to projects at hand. A large variety of stocks have been investigated. New methods of processing have been devised and the operating conditions indicated. Thus research has simplified the procedure necessary when a specific problem is at hand.

THE M. W. KELLOGG COMPANY, 225 BROADWAY, NEW YORK, N. Y.
LOS ANGELES, CAL., 1031 SOUTH BROADWAY TULSA, OKLAHOMA, PHILTOWER BUILDING

KELLOGG

Kellogg products include Cross, Holmes-Manley, and de Florez cracking units; de Florez furnaces and temperature control apparatus; pipe stills; Pacific Centrifugal Pumps; absorption, stabilization, and treating plants; Masterweld pressure vessels; complete refinery and power plant piping

Manufacture of Natural Gasoline

Sale of Bottled Gas In Mexican Cities Is Plan of New Company

Sale of bottled gas in Mexico is planned following the organization of the Gases y Combustibles, S. A., with principal offices in Mexico. The project is sponsored by the Mexican government, which has a financial interest in it. Plans made include shipment this month from Los Angeles, Calif., of equipment required for getting distribution of the liquefied petroleum gas under way, including cylinders for use as containers, water heaters and ranges. It is planned to experiment with the appliances first in Mexico City and to establish bottled gas service in that city as soon as possible. Later, according to present plans, plants for handling the gas will be constructed at central points in that city. Expansion of the service to points outside Mexico will follow as soon as practicable.

Government institutions are expected to be the first consumers of the bottled gas, with extension to general use as fast as residents of various communities see the advantages of the new fuel and demand for it increases.

The general manager of the Gases y Combustibles, S. A., is E. Valle Cambre, a consulting engineer of Mexico City. Government interests in the enterprise will be looked after by J. T. Parades. The corporation will be represented in the United States by E. D. Taylor, of Los Angeles.

Petrolane, Ltd., Long Beach, Calif., has received a contract from Gases y Combustibles, S. A., for the required supply of liquefied petroleum gas, and the latter company has engaged C. E. McCartney, general manager of Petrolane, Ltd., to serve as its consulting engineer. Mr. McCartney is expected to go to Mexico City this month to help in getting details of distribution under way.

A primary reason for the Mexican government's interest in the introduction of liquefied petroleum gas as a fuel in that country is the problem of deforestation which faces it. Timber supplies and watersheds are menaced by the wide use of charcoal as a fuel and the government has been grappling with the question of a substitute for this fuel.

PRICE MOVEMENTS COMPARED

"There is a close relationship between the trend of prices of natural gasoline at the plants and that of gasoline at the refineries," points out the Bureau of Mines report on "Natural Gasoline in 1930," just published. "In 1930 the price of U. S. Motor gasoline in Oklahoma declined from 6.89 cents per gallon in the first week of January to 4 cents on December 31, a net drop of 2.89 cents per gallon. This drop compares closely with a net drop of 2.75 cents per gallon in the posted price of natural gasoline. In 1930 the production of natural gasoline was reduced and stocks at the plants were drawn on, both factors usually conducive to an increase in price."

NATURAL GASOLINE IN 1930

Production of natural gasoline, which had risen steadily up to 1930, showed a sharp reversal in that year, when the output failed to reach the 1929 figures, according to the Bureau of Mines report, "Natural Gasoline in 1930," now available for distribution. The report, which makes a booklet of 24 pages, was prepared by G. R. Hopkins and E. M. Seeley. It may be obtained from the Superintendent of Documents, Washington, D. C. The price is 5 cents.

THERMAL EXPANSION OF COMMON LIQUEFIED PETROLEUM GASES

By T. W. Legatski
Phillips Petroleum Co.*

Because of the fact that liquefied petroleum gases are being manufactured, handled and transported in ever increasing quantities, a more universal recognition and understanding of the properties of such products and the relationship of those properties to the transportation regulations is desirable. The interrelation of the various physical properties of such products having a bearing on transportation and handling problems has been made the general subject of this paper.

The one most important physical property of liquefied petroleum gas, in so far as shipping and storage problems are concerned, is its coefficient of thermal expansion.

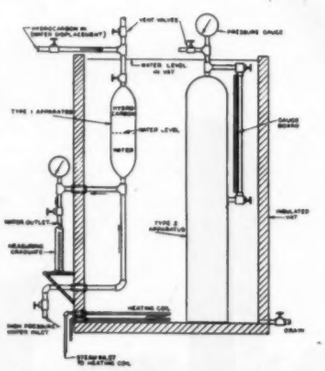


Figure 1—Schematic diagram of expansion apparatus, Types 1 and 2.

The primary object of the investigation was to obtain sufficient, complete and accurate information on the thermal expansions of commercial products for use in the formulation of more rational shipping regulations for such products.

*Results of part of an investigation undertaken jointly by the Phillips Petroleum Co. and the Bureau of Explosives.

In order to obtain the necessary information, typical commercial products were, in the course of the investigation, synthesized from the pure hydrocarbon components and were then subjected to a series of tests with the object of proving the interrelationship of the results of the several simple tests. The tests made in each product included determinations of the composition, normal boiling points, vapor pressure, specific gravity of the liquid and the coefficient of expansion. The methods and apparatus employed in the course of the work proved to be satisfactory enough to warrant a brief description of them here.

The apparatus used in the determination of the coefficients of expansion over a range of temperatures was of two general types as shown in Figure 1.

The apparatus denoted as No. 1 consisted of a 3-inch diameter pipe with the connections as illustrated. In the course of a determination, the container was filled completely with water at a temperature of 60° F. and under a pressure slightly in excess of the vapor pressure of the hydrocarbon at the maximum temperature to be employed. A temperature of 130° F. was the highest employed in the present work and consequently the pressure maintained on the container was slightly in excess of the vapor pressure at 130° F. of the particular hydrocarbons to be tested. The water in the container was partially displaced by pumping in under the same pressure 1,000 cc. of the hydrocarbon liquid to be tested, the actual amount being accurately determined by measuring the displaced water. Sufficient water would remain in the apparatus at the conclusion of this operation to effect a seal. The temperature of the surrounding water bath was then slowly increased in increments of 10° F., the effect of this temperature increase being a corresponding increase in the volume of the hydrocarbons trapped in the container under hydrostatic pressure. This increase in volume would immediately become apparent from the rising pressure noted on the gauge and could be measured accurately by drawing off in a graduate a sufficient quantity of water to maintain the initial pressure on the container. Although there are obviously other factors which enter into the exact determination of the thermal expansions of hydrocarbons in this manner, such as the thermal expansion of the entrapped water and of the container itself, it was proven in the course of the investigation that these effects were of very nearly the same magnitude and tended to offset one another, so that in the final analysis the actual volume of water drawn from the container for each increment increase in temperature proved to be a direct measure of the expansion of the 1,000 cc. hydrocarbon charge. The conversion of the observed readings to a more readily usable form then became a matter of simple arithmetic.

A second apparatus, which has been designated as No. 2 in Figure 1, was used as an independent check on the apparatus just described. This latter apparatus is of a type commonly employed by the Bureau of Explosives in arriving at necessary outages and is so designed as to closely duplicate the conditions as existing in tank cars and other shipping containers. In the present case the apparatus consisted of an I.C.C. 3 container (Blaugas cylinder) fitted with a gauge glass and connections as illustrated. The apparatus was calibrated by filling with water at 60° F. to the top of the fittings and then weighing the filled container on an accurate 500-pound capacity platform scale. The difference between this weight and the weight of the empty container was recorded as the water weight capacity of the container and was used as a basis for all subsequent calculations on allowable loading density. To scale the container for volumes, the empty container was filled with 60° F. water measured in with 1,000 cc. graduates. The levels observed for each succeeding addition of water were marked on a gauge board affixed to the rear of the gauge glass.

In using this apparatus the calculated weight of hydrocarbon liquid arrived at from the results obtained on apparatus No. 1 was added to the evacuated container, which was then placed in a controlled temperature water bath. The temperature of the bath was maintained at 60° F. for a period of half an hour in order to arrive at an accurate initial volume reading. To take readings, the apparatus was hoisted in the bath to a point where the meniscus came into view. A spirit level was used to make certain that the apparatus was always plumb when readings were being taken. After the initial reading the temperature of the bath was raised in 10° F. increments from 60° F. to 130° F., sufficient time being allowed at each 10° F. interval for the apparatus to come to temperature equilibrium before taking readings. The readings taken included the actual volume, the pressure on the container and the temperature.

Analyses to determine the composition of the samples investigated were made in each case. The method followed was one of low temperature fractional distillation and the results constituted a direct check on the synthesis of the various mixtures.

The normal boiling temperatures were determined by means of an open cylinder weathering test. In this test 100 cc. of the hydrocarbon liquid are allowed to boil in an open cylinder, and the temperature obtained by means of a total immersion thermometer for the various percentages evaporated are recorded. These boiling temperatures have been shown to

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TABLE 1—SECOND SERIES TESTS—TEST NO. 1

Normal Butane

Properties of product— Composition (by analysis)—	Mol. %	% by liquid volume	Specific gravities	
Butane	99.34	99.18	Of liquid (water=1)	.585
Pentanes	.66	.82	Of vapor (air=1)	1.992

Boiling point range— (Open cylinder weathering test)—	Vapor pressure (by L. P. G. vapor pressure bomb)— Temp. °F.	pressure lbs./sq. in. gauge
Initial boiling point, 28.3° F.	70	22
Middle boiling point, 29.0° F.	90	33
Final boiling point, 30.0° F.	100	42

Calculations on Allowable Loading Density for Maximum Temperature of 130° F.

Water weight capacity of Type 2 thermal expansion apparatus ..... =61.125 lbs.
Maximum allowable loading density (determined on Type 1 apparatus).. =53.7%
0.537×61.125=32.813 lbs. of butane ..... =allowable charge

Observations on Type 1 Apparatus (1,000 c.c. Charge)

Temp. °F.	Volume increase, cm.³ (water drawn off)	New volume (hydrocarbon)	Volume correction factor to 60°F.	Factor, actual volume at observed temperature
60	....	1,000.0	1.000	1 0000
70	11.0	1,011.0	.989	1.0110
80	22.6	1,022.6	.978	1 0226
90	34.5	1,034.5	.967	1 0345
100	47 0	1,047.0	.955	1.0470
110	60.3	1,060.3	.943	1.0603
120	75.0	1,075.0	.931	1.0750
130	89.7	1,089.7	.918	1 0897

Observations on Type 2 Apparatus

Temp. °F.	Volume cm.³	Gauge pressure	Time	Volume correction factor to 60° F.	Factor, actual volume at observed temp.
60	25,700	15	10:05p.m.	....	.....
70	26,000	20	10:35	.9885	1.012
80	26,300	27	11:10	.9772	1.024
90	26,600	34	11:40	.9662	1 035
100	26,900	41	12:10	.9554	1.047
110	27,200	50	12:40a.m.	.9448	1 0585
120	27,550	60	1:10	.9329	1.0715
129.5	(*)	69	1:30	.....	.....
130	(*)	120	1:40	.....	.....

*Level out of gauge glass.

Control Results Guaranteed!

● Given the opportunity to engineer the complete control equipment on any refinery unit, Foxboro will guarantee satisfactory results. Foxboro has the Engineers, the Experience, and the Instruments necessary to solve every refinery problem in control of TEMPERATURE, PRESSURE, FLOW AND LEVEL.

● This is a big statement, but we stand ready not only to prove it but we guarantee satisfactory results.

● When the opportunity is not available to specify complete control equipment, Foxboro will still guarantee the design and construction of their instruments.

● In the first place, their design is correct. A broad experience with refinery problems has enabled our design engineers to design correctly for refinery practice.

● In the second place, they are built correctly;—simple, rugged, with a maximum factor of safety, and minimum friction.

● Whether you want results guaranteed on a complete unit or individually guaranteed instruments, you can get them from Foxboro. Complete information on our instruments or service will be sent promptly. Send us the complete details of your problem.

FOXBORO
REG. U. S. PAT. OFF.
THE COMPASS OF INDUSTRY

THE FOXBORO COMPANY
Neponset Ave., Foxboro, Mass., U. S. A.
28 No. Guthrie Ave., Tulsa, Okla.—Magnolia Bldg., Dallas, Texas
J. E. Treacy, Strada Golesti No. 9, Ploesti, Roumania
New York Chicago Boston Philadelphia Pittsburgh Cleveland
Rochester, N. Y. Atlanta Los Angeles San Francisco
Portland, Ore. Detroit Salt Lake City
Agents for Robinson Patented Orifice Flange Fittings

Instruments for Controlling, Recording and Indicating Temperature, Flow, Level and Pressure

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINES

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
*U. S. Motor	.04⅞	.05¼	.04½	.04¾
60-62 400	.05	.05⅜	.04⅝	.04¾
64-66 390	.05⅛	.05½	.04¾	
64-66 375	.05¼	.05½	.04¾	.05
68-70 350	.05¼	.05½	.05	.05⅛
NORTH TEXAS—				
*U. S. Motor	.04¾	.05	.04⅜	.04¾
60-62 400	.04⅞	.05⅛	.04½	.04¾
64-66 390	.05	.05¼	.04⅝	.04¾
64-66 375	.05⅛	.05¼	.04¾	
64-66 360	.05¼		.04¾	.05
†NORTH LOUISIANA—				
*U. S. Motor	.05¼		.05	
60-62 400	.05¼	.05⅜	.05	
†ARKANSAS—				
*U. S. Motor	.05¼		.05	
CHICAGO Based on Okla. (Group 3)—				
*U. S. Motor	.04¾		.04¼	.04½
60-62 400	.04¾	.04⅞	.04⅜	.04⅝
64-66 375	.04⅞	.05⅛	.04⅝	.04⅞
Aviation fighting grade	.05⅞	.07½	.05⅝	.05⅞
68-70 360	.05	.05¼	.04⅞	.05⅛

Octane Ratings—Above quotations cover price ranges on gasoline in which no octane rating is given. In the case of the U. S. Motor and 60-62 400 endpoint grades where an octane rating of 57-65, inclusive, is guaranteed, prices are three-eighths cent per gallon higher than quotations shown in above tables; where an octane rating of better than 65 is guaranteed, the prices are three-fourths cent higher. In the case of the remaining grades, gasolines of 65 octane rating or higher are quoted one-half cent higher than the quotations shown in above tables. Unless otherwise provided by agreement of buyers and sellers, the Series 30 testing equipment of the Ethyl Gasoline Corp. is recognized as standard in determining octane ratings.

*Present distillation specifications on U. S. Motor gasoline are: 10 per cent evaporated, 167° F. maximum; 50 per cent, 284° F. maximum; 90 per cent, 392° F. maximum; residue not exceeding 2 per cent; maximum vapor pressure, 12 pounds. Additional specification on U. S. Motor gasoline available from bulletins of Bureau of Mines, Washington, D. C.

†For Arkansas, Louisiana and Mississippi delivery.

PENNSYLVANIA (inland refineries)—				
U. S. Motor	.05¼	.05½	.04¾	.05
60-62 400	.05⅝	.05½	.04¾	.05
64-66 375	.05½	.05¾	.05	.05¼
68-70 350	.05⅝		.05½	.05¾

Octane Ratings—In the case of U. S. Motor and 60-62 400 endpoint grades, same price differentials based on octane ratings as shown in above tables for Oklahoma and other Mid-Continent areas.

CALIFORNIA (domestic movement only)—				
54-58 U. S. Motor	.05½	.06	.04½	.05
58-60 400	.06	.06½	.05	.05½
EAST COAST—				
U. S. Motor, below 65 octane:				
New York (Bayonne)	.06¼		.05¾	
Boston	.06½		.06	
Baltimore, Md.	.06¼		.05¾	
Charleston, S. C.	.06¼		.05¾	
U. S. Motor, 65 octane and above:				
New York (Bayonne)	.06½	.07	.06	.06½
Boston	.07	.07¼	.06¾	
Baltimore, Md.	.06½	.06¾	.06	.06¾
Charleston, S. C.	.06½	.06¾	.06	.06½
GULF COAST (domestic)—				
U. S. Motor, 65 octane and above	.05¼	.05½	.05¼	.05½
U. S. Motor, below 65 octane number	.05	.05¼	.05	.05¼

NAPHTHAS

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
50-52 450 (blending)	.04¾	.05	.04½	.04⅝
PENNSYLVANIA (inland refineries)—				
50-54 430-450 (blending)	.05	.05⅛	.04¼	.04½
ARKANSAS—				
48-50 450 (blending)	.04¾	.05	.04⅝	.04¾
CHICAGO Based on Okla. (Group 3)—				
50-52 450 (blending)	.04¼	.04½	.04	.04¼
Cleaners' naphtha, 56-58 gr. 200 i.b.p.-320 e.p.	.06¼	.06½	.06¼	.06½
Lacquer diluent, 180 i.b.p.-250 e.p.	.09¼	.09½	.09¼	.09½
Lacquer diluent, 140 i.b.p.-200 e.p.	.09¼	.09½	.09¼	.09½
Rubber solvent, 68-70 gr., 100 i.b.p.-300 e.p.	.05	.06	.05	.06
Stoddard solvent, 300 i.b.p.-410 e.p., over 100° flash	.05½	.05¾	.05½	.05¾
Pet. thinner, 290, 300 i.b.p.-415 e.p., over 83° flash	.04¾	.05	.04¾	.05
V.M.&P. naphtha, 56-58 gr., 190-200 i.b.p.-330 e.p.	.05¾	.06	.05¾	.06
Petroleum spirits	.04¼	.04⅝	.04¼	.04⅝

NATURAL GASOLINES

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
Grade 18-55	.03	.03¼	.02⅝	.02¾
Grade 26-70	.02¼	.02½	.02¼	.02½
Grade 30-70	.02		.02	.02¼
NORTH TEXAS—				
Grade 18-55	.03	.03⅛	.02⅝	.02¾
Grade 26-70	.02¼		.02¼	.02½
Grade 30-70	.02		.02	.02¼
NORTH LOUISIANA—				
Grade 26-70	.02½		.02½	
CALIFORNIA—				
57-78 375	.04½	.05	.04¼	.05

Note—Grades 18-55, 26-70 and 30-70 are three of 24 grades adopted by the Natural Gasoline Association of America effective January 1. The grades are based on pounds vapor pressure and amount evaporated at 140° F. See Page 74 of January 7 issue for explanation of new grading system. While not exactly the same specifications apply. Grade 18-55 corresponds to the former Grade A; Grade 26-70 to former Grade AA and Grade 30-70 to former Grade BB.

KEROSENES

(All kerosenes water white)

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
41-43	.03⅞	.04¼	.03½	.03¾
42-44	.04¼	.04⅜	.03¾	.03⅞
NORTH TEXAS—				
40-41	.03¾	.04	.03½	.03⅝
41-43	.03⅞	.04⅛	.03⅝	
†NORTH LOUISIANA—				
41-43	.04		.03¾	.03⅞
42-44	.04¼		.03⅞	.04⅛
†ARKANSAS—				
41-43	.04	.04⅛	.03⅞	
PENNSYLVANIA (inland refineries)—				
45	.04¼	.04⅜	.04	.04¼
46	.04⅜	.04½	.04¼	.04⅜
47	.04½	.04⅝	.04½	
CHICAGO (Based on Group 3)—				
41-43	.03⅞	.04⅛	.03⅜	.03½
42-44	.04	.04¼	.03½	.03⅝
***CALIFORNIA—**				
38-40 high burning test	.03¾	.04½	.03¾	.04½
NEW YORK (Bayonne, N. J.)—				
41-43	.05¼	.05½	.05¼	.05½
GULF COAST (domestic)—				
41-43 water white	.04¼	.04½	.04¼	.04½

*For Pacific Coast consumption.

†For Arkansas, Louisiana and Mississippi delivery.

TRACTOR FUELS*

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
39-40 prime white	.02½	.02¾	.02⅜	.02½
38-40 light straw	.02⅝	.02⅝	.02¼	.02⅝
NORTH TEXAS—				
38-40 light straw	.02¾	.02⅝	.02¼	.02½
CHICAGO (Based on Group 3)—				
38-40 light straw	.02⅛	.02¼	.02⅛	.02¼
PENNSYLVANIA (inland refineries)—				
41-43 prime white	.04	.04¼	.04	.04¼

*There are no standard specifications for tractor fuels. Grades commonly sold have flash under 175° F. (open cup) and under 575° F. endpoint and less than .2 per cent sulphur. Tractor fuels are available from all Mid-Continent refining groups at prices in line with the Oklahoma market taking into consideration differentials in freight rates.

FURNACE OILS*

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
32-36 straw	.02	.02¼	.02	.02¼
36-38 straw	.02	.02¼	.02	.02¼
38-40 straw	.02⅛	.02¼	.02⅛	.02¼
39-41 prime white	.02⅜	.02½	.02⅜	.02½
NORTH TEXAS—				
38-40 straw	.02⅛	.02½	.02⅛	.02¼
†NORTH LOUISIANA—				
36-40	.02½	.02⅝	.02½	.02⅝
†ARKANSAS—				
32-36	.02½	.02⅝	.02½	.02⅝
CHICAGO (Based on Group 3)—				
32-36 straw	.01⅞	.02	.01⅞	.02
38-40 straw	.02	.02¼	.02	.02⅛
PENNSYLVANIA (inland refineries)—				
40-41 prime white	.03¾	.04	.03½	.04
NEW YORK (Bayonne, N. J.)—				
32-36	.04		.04	
36-40	.05		.05	

*Above prices are for furnace oils of zero cold test, under 190° F. flash and good odor.

†For Arkansas, Louisiana and Mississippi delivery.

GAS OIL, DIESEL OIL AND FUEL OIL

Gas oil (G.O.) quoted per gallon basis; Diesel oil and fuel oil per barrel.

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
22-36 (G.O.) cracking stock	.01⅝	.01½	.01⅝	.01½
U.G.I. (G.O.)	.01¼	.01½	.01¼	.01½
32-36, zero to 15 (G.O.) high flash	.01⅝	.01¾	.01⅝	.01¾
28-30, zero to 10	.50	.55	.50	.55
26-30, zero to 10	.45	.50	.45	.50
24-26	.37½	.42½	.37½	.42½
20-22	.32½	.35	.32½	.35
16-20	.27½	.30	.27½	.30
Below 16	.25	.30	.25	.30
2,000-6 plus	.11	.11½	.11	.11½
NORTH TEXAS—				
32-36 (G.O.) industrial	.01¼	.01½	.01¼	.01⅜
22-26	.40	.42½	.40	.42½
Below 20	.25	.35	.25	.35
†NORTH LOUISIANA—				
32-36 (G.O.) zero	.02¼	.02½	.02¼	.02⅜
14-16	.35	.45	.35	.45
†ARKANSAS—				
32-36 (G.O.) zero	.02¼	.02½	.02¼	.02⅜
14-16	.35	.45	.35	.45
CHICAGO (Based on Group 3)—				
32-36 (G.O.) industrial	.01⅛	.01¼	.01⅛	.01¼
28-30 (zero)	.52½	.57½	.52½	.57½
22-26	.35	.37½	.32½	.37½
18-22	.30	.32½	.27½	.30
Below 18	.25	.27½	.22½	.25
PENNSYLVANIA (inland refineries)—				
36-40	.03⅛	.03¼	.03	.03¼

Note—Fuel oils of more than 40 cold test generally 5 to 10 cents per barrel less in all areas than shown in above tables.

†For Arkansas, Louisiana and Mississippi delivery.

CALIFORNIA—				
30-34 (G.O.) per bbl.	.75	.95	.75	.95
27 plus Diesel	.75	.90	.75	.90
15-19 Bunker (at tidewater)	.55	.75	.55	.75
15-19 Bunker (cargo lots)	.50	.65	.50	.65
15-19 (tank cars)	.45	.70	.40	.70
GULF COAST—				
28-30 (G.O.)	.03	.03⅛	.02⅞	.03
28-30 Diesel	1.20		1.15	
Bunker C (bulk cargoes)	.45	.50	.45	.50
Bunker C (bunkers)	.50	.52½	.50	
NEW YORK (Bayonne, N. J.)—				
28 plus (G.O.)	.04		.04	
*28-30 Diesel	1.30		1.30	
†Bunker C	.65		.65	

*Lighterage 6½ cents per barrel.

†Lighterage 5 cents per barrel.

PETROLEUM COKE*

Prices per ton f.o.b. refineries in Chicago area.

	Apr. 19		Apr. 12	
Breeze (screenings)	3.75		3.75	
Still runs	4.75		4.75	
Lump and egg	7.00	7.50	7.00	7.50

*Refiners will absorb freight up to 80 cents a ton.

NEUTRAL OILS

(Viscosity at 100° F. and Color)

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
Zero to 10 Cold Test:				
150-3	.06¼	.06½	.06¼	.06½
180-3	.07½	.07¾	.07½	.07¾
180-4	.07	.07¼	.07	.07¼
200-3	.08½		.08½	
200-4	.08	.08¼	.08	.08¼
240-3	.09¾	.10	.09¾	.10
240-4	.09¼	.09½	.09¼	.09½
280-3	.11¼	.11½	.11¼	.11½
280-4	.10¼	.10½	.10¼	.10½
300-3.5	.11¾	.12	.11¾	.12
350-3.5	.12¼	.12½	.12¼	.12½
400-4	.12¾	.13	.12¾	.13
500-4.5	.13¼	.13½	.13¼	.13½
100-2 Paraffin Oil	.04¼	.04½	.04¼	.04½
15-30 Cold Test:				
200-3	.07¾	.08	.07¾	.08
200-4	.07½	.07¾	.07½	.07¾
240-3	.09¼	.09½	.09¼	.09½
240-4	.08¾	.09	.08¾	.09
280-3	.10¾	.11	.10¾	.11
280-4	.09¾	.10	.09¾	.10
PENNSYLVANIA—				
150 vis., No. 3, 400-405:				
Zero pour test	.15	.16	.15	.16
10 pour test	.14	.15	.14	.15
15 pour test	.13½	.14½	.13½	.14½
25 pour test	.12¾	.13¾	.12¾	.13¾
30 pour test	.12¾	.13	.12¾	.13
180 vis. No. 3, 25 pour test	.15¾	.16½	.15¾	.16½
200 vis., No. 3:				
Zero pour test	.22	.23½	.22	.23½
10 pour test	.21	.22	.21	.22
15 pour test	.19½	.20	.19½	.20
25 pour test	.18	.18½	.18	.18½
30 pour test	.17¾	.18	.17¾	.18
36 Miners' Neutral	.05½		.05½	
34 Neutral	.05½		.05½	
34 Sundebloom Neutral	.05		.05	
GULF COAST—				
Pale Oils:				
100-2-2½	.05		.05	
200-3	.06½		.06½	
300-3	.07		.07	
500-3½	.08	.08½	.08	.08½
750-3½	.09	.09½	.09	.09½
1,200-3½	.10½	.11	.10½	.11
2,000-4	.12	.12½	.12	.12½
Red Oils:				
200-5-6	.05	.05½	.05	.05½
300-5-6	.05½	.06	.05½	.06
500-5-6	.06¾	.07	.06¾	.07
1,200-5-6	.09½	.10	.09½	.10

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

CALIFORNIA—				
Pale Oils:				
100-2½-3	.07¾	.08	.07¾	.08
200-2½-3	.07¾	.08	.07¾	.08
300-3-3½	.08¼	.08½	.08¼	.08½
350-3-4	.08¾	.09	.08¾	.09
400-3-4	.09¼	.09¾	.09¼	.09¾
530-3-4	.09¾	.10	.09¾	.10
550-3-4	.10¼	.11	.10¼	.11
Red Oils:				
200-4½-5	.07¾	.08¼	.07¾	.08¼
300-5-6	.08¼	.08¾	.08¼	.08¾
350-5-6	.09	.09¼	.09	.09¼
400-5-6	.09½	.09¾	.09½	.09¾
450-5-6	.10	.10¼	.10	.10¼
500-5-6	.10½	.11	.10½	.11
600-5-6½	.11½	.12	.11½	.12
700-6½ plus	.12½	.12¾	.12½	.12¾
750-6½ plus	.13	.13½	.13	.13½
900-6½ plus	.14½	.14¾	.14½	.14¾
NEW YORK (Bayonne, N. J.)—				
Paraffin Oil:				
25 pale	.10¼		.10¼	
28 pale	.07¼		.07¼	
280 red	.12½		.12½	
250 red	.11½		.11½	
225 red	.10		.10	
200 red	.09¼		.09¼	

BRIGHT STOCKS AND STEAM REFINED STOCKS

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
600 light green S.R.	.05	.06	.04½	.06
600 dark green S.R.	.04	.04½	.03½	.05
Bright Stock:				
190-200 D	.22		.22	
150-160 D, 0-10	.19¾	.20	.19¾	.20
150-160 D, 10-25	.19¼	.19½	.19¼	.19½
150-160 D, 25-40	.18¾	.19	.18¾	.19
150-160 E	.18¾	.19	.18¾	.19
PENNSYLVANIA—				
600 S.R.	.12½	.13	.12¾	.13½
650 S.R.	.15½	.16	.15½	.16
600 Pennsylvania flash	.16½	.17	.16½	.17
610 D filtered	.21½	.22	.21½	.22
600 E filtered	.15½	.16	.15½	.16
Pennsylvania Grade bright stock: Bright Stock, No. 8 color, 145-50 vis., 210-540-550 flash:				
10 pour test	.25	.26½	.25	.26½
15 pour test	.22½	.23½	.22	.23
25 pour test	.21½	.22½	.21	.22
35 pour test	.21	.22	.20½	.21½

WAX AND PETROLATUM

(Prices per pound)

OKLAHOMA (Group 3)—	Apr. 19		Apr. 12	
124-126 white crude scale	.01¾	.02	.01¾	.02
PENNSYLVANIA—				
122-124	.02	.02⅛	.02	.02⅛
124-126	.02⅛	.02¼	.02⅛	.02¼
NEW YORK (Bayonne, N. J.)—				
Refined Wax:				
120-122	.02⅞		.02⅞	
125-127	.03⅛		.03⅛	
130-132	.03⅝		.03⅝	
133-135	.04⅛		.04⅛	
135-137	.04¼		.04¼	
Petrolatum in barrels in carload lots:				
Dark Green	.01¾		.01¾	
Amber	.02⅛		.02⅛	
Extra amber	.02⅝		.02⅝	
Cream	.04⅝		.04¾	
Lily white	.05⅝		.05¾	
Snow white	.06⅝		.06¾	

EXPORT PRICES

GASOLINE

GULF COAST—	Apr. 19		Apr. 12	
U. S. Motor	.05	.05¼	.04½	.04¾
60-62 400	.05	.05½	.04⅝	.04⅞
61-63 390	.05½	.05⅝	.04¾	
64-66 375	.05½	.05¾	.04¾	.05
LOS ANGELES, CALIF.—				
U. S. Motor, 53-55 437 e.p.	.04	.04½	.03¾	.04¼
U. S. Motor, 65 octane num.	.05		.05	
U. S. Motor, 67 octane num.	.05¼		.05¼	
U. S. Motor, 69 octane num.	.05½		.05½	
58-62 400 endpoint gasoline	.04½		.04¼	

KEROSENE

GULF COAST—				
41-43 prime white	.04¼		.04¼	.04½
41 water white	.04⅜	.04½	.04½	.04⅝
LOS ANGELES, CALIF.—				
41-43 water white	.04	.04¾	.04	.04¾

LUBRICANTS

NEW YORK (Bayonne, N. J.)—				
600, steam refined cylinder stocks, in bbls.	.21	.22	.21	.22
650, steam refined	.22	.23	.23½	.24
600, Pennsylvania flash	.23	.24	.24½	.25
630, Pennsylvania flash	.29½		.27½	.28
600, Warren E	.23	.24	.23½	.24
600, Oil City E	.22½	.23	.22½	.23
Light 140-150 Bright Stocks	.29		.30	.31
Dark 140-150 Bright Stocks	.28	.29	.29	.30

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

East Texas (Apr. 1, 1932)† ..... $ .98
East Texas (April 11, 1932)‡ ..... .98
Corsicana heavy* ..... .64
Other fields..... See gravity table

†Posted by Magnolia Petroleum Co., Sinclair Refining Co., Panola Pipe Line Co., Tidal Refining Co. and The Texas Company. ‡Gulf Pipe Line Co. and Atlas Pipe Line Co. *Magnolia Petroleum Co.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective December 16, 1931)

Pennsylvania Grade Oil in National Transit Lines (Bradford Field) (Mar. 14, 1932) $1.82
Pennsylvania Grade Oil in Southwest Pennsylvania Lines 1.55
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia) (Feb. 26, 1932) 1.50
Penna Grade Oil in Buckeye Pipe Line Lines (Mar. 12, 1932) 1.35
Corning Grade Oil in Buckeye Pipe Line Co.'s line (April 12, 1932) ..... .95
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky) (Jan. 10, 1931) ... .60

Pennzoil Co.
(Effective March 14, 1932)

Pennsylvania Grade Oil in National Transit Lines:
Group A $1.77
Includes Cochran, Franklin, Hamilton and Doolittle districts.
Group B 1.76
Includes Titusville district.
Group C 1.75
Includes Turkey and Tidiout districts.
Group D 1.74
Includes Bear Creek and Porkey districts.
Group E 1.72
Includes Eldenau, Bull Creek, Rough Run, Carbon, Dipner, Bredin, McJunkin, Jameson, Kennerdell, Emlenton, Tiona, Lacy and Kinzua districts.
Price depends on length of pipe line haul to plant at Oil City.

Tide Water Pipe Co.
(Effective March 14, 1932)

Bradford, Pa. $1.82
Allegany, N. Y. 1.82

Pure Oil Co.
(Effective December 16, 1931)

Cabin Creek, W. Va. $1.45
Bradford Hollow, W. Va. 1.45
Kelly's Creek, W. Va. 1.45

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties..... See gravity table

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.

Iles, light (Aug. 24, 1931) ..... $ .75
Iles, heavy (Aug. 24, 1931) ..... .53
Fort Collins (April 11, 1932) ..... .86
Florence (April 11, 1932) ..... .80
Wellington (April 11, 1932) ..... .76
Greasewood Dome, Colo. (Apr. 11, 1932) 1.00
Dutton Creek (April 11, 1932) ..... .82
Rock Creek, Wyo. (April 11, 1932) 1.00
Frannie, light (Nov. 3, 1931) ..... .61
Frannie, heavy (Nov. 3, 1931) ..... .51
Salt Creek..... Mid-Continent gravity table
LaBarge..... Mid-Continent gravity scale.
Big Muddy (April 11, 1932) ..... .98
Grass Creek (April 11, 1932) 1.20
Elk Basin (April 11, 1932) 1.20
Lance Creek (April 11, 1932) 1.15
Poison Spider (Mar. 5, 1931) ..... .70
Notches (Mar. 14, 1927) ..... .65
Hudson (June 2, 1931) ..... .65
Lander (Mar. 5, 1931) ..... .40
Rex Lake (Feb. 22, 1930) 1.10
Osage (Apr. 15, 1931) ..... .98
Lost Soldier (April 12, 1932) ..... .80
Hamilton Dome (Nov. 3, 1931) ..... .45
Greybull (April 11, 1932) 1.20
Cat Creek (April 11, 1932) 1.20
Pondera (Nov. 3, 1931) ..... .90
Sunburst, Mont. (April 11, 1932) 1.05
Hogback, N. Mex. (Aug. 24, 1931) ..... .80
Border, Mont. 1.55
Red Coulee, Alberta 1.55
Lea County, N. Mex. (Apr. 1, 1932)* .. .65
Dry Creek, Mont. (Aug. 24, 1931) 1.00
Maljamar (April 11, 1932) ..... .60
Artesia-Jackson (April 11, 1932) ..... .65

Note—Salt Creek, Cat Creek, Dry Creek, Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and remainder by Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia, Jackson and Maljamar posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Lea County posted by Humble Oil & Refining Co. Fort Collins, Wellington, Orchard, Florence, Rattlesnake and Table Mesa by Continental Oil Co. Osage posted by Arro Oil & Refining Co.
*Posted by The Texas Company. Humble Oil & Refining Co. met this price effective April 11.

WEST TEXAS

Iatan and Westbrook..Same as North Texas
Crane, Upton, Crockett, Howard, Glasscock, Mitchell, Ector, Winkler and Pecos Counties* ..... $ .65
Lea County, N. Mex. (See Rocky Mountain States).
Toborg, Pecos County (April 11, 1932)† .55

*Effective April 1, 1932, Magnolia Petroleum Co., The Texas Company. Effective April 11, Humble Oil & Refining Co. and Gulf Pipe Line Co. and Stanolind Oil & Gas Co. in Winkler County. †Shell Petroleum Corp.

GULF COAST

Grade A and Grade B classifications discontinued by leading buyers.....
.....See gravity table
Jennings, La. (April 11, 1932)*..... $ .75
Lockport, La...See Gulf Coast gravity table
Refugio, light..... See gravity table
Refugio, heavy (April 11, 1932)‡ ..... .80
Markham (April 11, 1932)‖.....
.....See Gulf Coast gravity schedule
High Island (April 11, 1932)¶.....
.....See Gulf Coast gravity schedule

*Gulf Refining Co. †Magnolia Petroleum Co. ‡Humble Oil & Refining Co. §The Texas Company. ¶Yount Lee Pipe Line Co.

NORTH LOUISIANA AND ARKANSAS

Smackover, Ark. (all grades) ..... $ .65
Urania, La. (April 12, 1932) ..... .60
East El Dorado, Ark. (April 6, 1932).. .65
Stephens, Ark., below 29° (April 12, 1932) ..... .61
Stephens, Ark., 29° and above (April 12, 1932) ..... .64
Other fields..... See gravity table

Note—Smackover, all grades, The Texas Company, April 1, 1932; Magnolia Petroleum Co., April 6, 1932; Standard Oil Co. of Loui-

(Continued on Page 38)

CRUDE OIL GRAVITY TABLE

	Kansas and Oklahoma	North and Central Texas	East Central Texas	Gray County, Texas	Carson and Hutchinson Counties, Texas	Salt Creek and LaBarge, Wyoming	North Louisiana and Arkansas	Gulf Coast (Texas-Louisiana)	Cameron Meadows, Louisiana	Iowa and Lockport, Louisiana
	1	2	3	4	5	6	7	8	9	10
Below 25 degrees	....	....	$.67	....	....	....	$.68	$.80	$.70	$.80
25-25.9 degrees	....	....	.67	....	....	....	.70	.81	.71	.81
26-26.9 degrees	....	....	.67	....	....	....	.72	.82	.72	.82
27-27.9 degrees	....	....	.67	....	....	....	.74	.83	.73	.83
28-28.9 degrees	....	....	.76	....	....	....	.76	.84	.74	.84
Below 29 degrees	$.76	$.76	....	....	....	$.76	....	....	....	....
29-29.9 degrees	.78	.78	.78	....	....	.78	.78	.85	.75	.85
30-30.9 degrees	.80	.80	.80	....	....	.80	.80	.86	.76	.86
31-31.9 degrees	.82	.82	.82	....	....	.82	.82	.87	.77	.87
32-32.9 degrees	.84	.84	.84	....	....	.84	.84	.88	.78	.88
33-33.9 degrees	.86	.86	.86	....	....	.86	.86	.89	.79	.89
34-34.9 degrees	.88	.88	.88	$.76	$.66	.88	.88	.90	.80	.90
35-35.9 degrees	.90	.90	.90	.78	.68	.90	.90	.91	.81	.91
36-36.9 degrees	.92	.92	.92	.80	.70	.92	.92	.92	.82	.92
37-37.9 degrees	.94	.94	.94	.82	.72	.94	.94	.94	.84	.94
38-38.9 degrees	.96	.96	.96	.84	.74	.94	.96	.96	.86	.96
39-39.9 degrees	.98	.98	.98	.86	.76	.94	.98	.98	.88	.98
40 degrees and over	1.00	1.00	1.00	.88	.78	.94	1.00	1.00	.90	1.00

Note—Magnolia Petroleum Co.'s prices in Oklahoma, North Texas and Central Texas, effective April 1, are the same as above given in Columns 1 and 2, excepting that the schedule begins with below 28 degrees, 67 cents; 28-28.9 degrees, 76 cents. The Empire Pipe Line Co. met the Magnolia prices in Kansas and Oklahoma; the White Eagle Oil Corp. in Kansas and the Pure Oil Co., in Oklahoma.

Column 1—Effective April 1, 1932, Continental Oil Co. in Oklahoma and Kansas; Barnsdall Refineries, Inc., and Standish Oil Co. (Phillips Petroleum Co.), in Oklahoma and Kansas; Skelly Oil Co., Kanotex Refining Co., Derby Oil Co., Vickers Petroleum Co., in Kansas; Magnolia Petroleum Co. and Pure Oil Co., in Oklahoma (see note above); White Eagle Oil Corp., in Kansas (see note above); The Texas Company in Oklahoma. Effective April 11, 1932,Stanolind Crude Oil Purchasing Co. in Oklahoma and Kansas; Gypsy Oil Co., Mid-Continent Petroleum Corp., Champlin Refining Co., Eason Oil Co., Pepper Gasoline Co. and Carter Oil Co. in Oklahoma. Carter Oil Co.'s schedule begins at below 25 degrees, 68 cents, with 2 cents added for each degree upward.

Column 2—Continental Oil Co., effective April 1, in North Texas only; followed on same day by The Texas Company in North and Central Texas; Magnolia Petroleum Co. in North and Central Texas (see note above); effective April 11, the Humble Oil & Refining Co., Gulf Pipe Line Co. and Stanolind Crude Oil Purchasing Co.

Column 3—Effective April 1, 1932, the Magnolia Petroleum Co.; effective April 11, 1932, Humble Oil & Refining Co.

Column 4—Effective April 1, 1932, Magnolia Petroleum Co.; effective April 2, the Philtex Oil Co. (Phillips Petroleum Co.), but its schedule was carried down to below 30 degrees at 66 cents, with 2 cents added for each degree upward. Effective April 11, other companies met Continental schedule.

Column 5—Effective April 1, 1932, Magnolia Petroleum Co.; effective April 2, Philtex Oil Co., excepting that latter company carried its schedule down to below 30 degrees at 56 cents, with 2 cents added for each degree upward. Effective April 11, Continental Oil Co. and Gulf Pipe Line Co. met Magnolia Petroleum Co. prices.

Column 6—Midwest Refining Co., effective April 11, 1932.

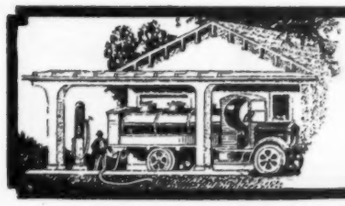
Column 7—The Texas Company, effective April 1, 1932; Magnolia Petroleum Co., effective April 6, 1932; Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Stanolind Oil & Gas Co. (in Pine Island and Pleasant Hill and in Marion County, Texas) and Gulf Refining Co., effective April 11, 1932.

Column 8—The Texas Company, effective April 1, 1932; Sun Oil Co., April 1, 1932; Humble Oil & Refining Co., effective April 11, 1932; Gulf Pipe Line Co., effective April 11, 1932. Gulf's gravity scale ends with a top of 35 and above at 91 cents.

Column 9—Magnolia Petroleum Co., effective April 6, 1932.

Column 10—Magnolia Petroleum Co., effective April 6, 1932.

(California Crude Oil Prices on Page 51)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns April 19.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Chicago	16.0	16 0	3.0	9.0
Decatur, Ill.	16.5	16.5	3.0	9.1
E. St. Louis	15.8	15.8	3 0	8 3
Joliet	16.5	16 5	3.0	9.1
Pearia	16 5	16 5	3 0	9.1
Quincy	16.3	16 3	3 0	8 9
Davenport, Ia.	16 6	16 6	3.0	9.4
Des Moines	16 6	16.6	3.0	9 4
Keokuk	16.6	16.6	3 0	9 4
Sioux City	16 2	16 2	3 0	9 0
Duluth, Minn.	17 6	17.6	3.0	10.0
Mankato	17 2	17 2	3 0	9.8
Minneapolis	17.3	17 3	3 0	10 0
LaCross, Wis.	18.3	18 3	4 0	10.1
Milwaukee	17 2	17.2	4.0	9.0
Madison	17 4	17.4	4 0	9 2
Detroit, Mich.	12.5	12 5	3 0	10.8
Grand Rapids	15 8	15.8	3 0	10.5
Saginaw	14 2	14.2	3.0	10.8
Evansville, Ind.	17.3	17.3	4 0	10 1
Indianapolis	17.3	17 3	4 0	10 1
South Bend	17.8	17 8	4 0	10 6
Fargo, N. D.	19.0	19 0	3.0	12.0
Huron, S. D.	18.4	17.0	4 0	10 8
Sioux Falls	17.0	17 0	4 0	10.5
K. C., Mo.	16.0	16 0	3 0	7 7
Springfield*	16.6	16.6	3.0	8 6
St. Louis*	15.5	15 5	3 0	8 4
St. Joseph	15.6	15.6	3 0	8 2
Wichita, Kans.	13 9	13 9	3.0	7.9
Bartlesville, Ok.	14 1	16 1	4 0	7.1

*State tax 2 cents, remainder city tax.

A third grade of gasoline, "Stanolind Blue," is sold at all major points at a price 1½ cents or more below the price on the regular grade.

Effective November 4—New dump discount applicable on all grades of gasoline sold from tank wagon. Any tank wagon customer buying 25 gallons or more at one time will be given 1-cent discount per gallon off tank wagon price at time of delivery. Customers not under contract receive no other discount.

Effective January 1—Discounts on Q.D.A. on 500 gallons or more per month throughout territory; Red Crown Ethyl Gasoline, 3 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 1 cent off tank wagon price. On deliveries of 75,000 gallons or more each classification allowed 1 cent additional discount.

Discounts on resellers authorized agent's agreement: Same amounts as above except made off service station price instead of tank wagon price.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Dallas, Tex.	16.0	17.0	4.0	9.0
Fort Worth	16.0	17.0	4.0	8.0
Houston	13.0	16.0	4.0	9.0
San Antonio	15.0	17.0	4.0	8.0
El Paso	14.0	16.0	4.0	11.0
Texarkana	*18.0	18.0	4.0	10.0
Muskogee, Ok.	14.0	16.0	4.0	8.0
Okla. City	14.0	16.0	4.0	8.0
Tulsa	14.0	16.0	4.0	8.0
Ft. Smith, Ark.	*17.5	17.5	5.0	†11.0
Little Rock	*18.5	18.5	6.0	†11.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

*Less 2½ cents to dealers. †Less 2 cents to dealers.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Pittsburgh, Pa.	16.0	17.0	3.0	11.0
Philadelphia	15.0	16.0	3.0	11.0
Scranton	16.0	17.0	3.0	11.0
Allentown	16.0	17.0	3.0	11.0
Altoona	16 0	17.0	3.0	11 0
Erie	16 0	17.0	3.0	11.0
Dover, Del.	16 0	17.0	3.0	11.0
Wilmington	16 0	17.0	3.0	11.0
Springf'd, Mass.	16 5	17.5	3.0	8.5
Worcester	16 5	17 3	3.0	8 5
Boston	15 5	16.5	3.0	8.5
Providence, R.I.	14.5	15 5	2 0	8 5
Hartford, Conn.	15 5	16 5	2 0	8.5
New Haven	15 6	16.6	2 0	8 5

OHIO

Standard Oil Co. (Ohio)

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Ohio points	17.5	18.0	4.0	*12.0

Dealers and commercial accounts 2 cents under tank wagon.

*Service station price 13 cents.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Denver, Colo.	16.0	19.0	4 0	13.5
Pueblo	16.0	19.0	4.0	13.0
Grand Jctn.	20.0	22.0	4 0	15.5
Casper, Wyo.	16 0	19.0	4 0	11.0
Cheyenne	15.0	18 0	4.0	12.5
Butte, Mont.	18.0	21.0	5.0	17.0
Billings	19.0	22.0	5.0	15.5
Great Falls	21.0	24.0	5 0	17.0
Helena	21 0	24.0	5.0	17.0
Salt Lake, Utah	18.0	21.0	4 0	16.0
Albu'que, N. M.	15.0	18.0	6 0	14.0
Boise, Idaho	†18.0	20.0	5.0	18.0
Twin Falls	19.0	22.0	5.0	18.0

*Two-cent discount off tank wagon to dealers.

†One-cent discount to dealers at time of delivery.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Atlanta, Ga.*	21.0	21.0	6.0	9.0
Augusta	21.0	21.0	6.0	14.0
Macon	21.0	21.0	6.0	12.0
Savannah	21.0	21.0	6.0	11.0
Birm'ham, Ala.	20.5	20.5	6.0	13.0
Mobile	22.0	22.0	5.0	10.0
Montgomery	21.5	21.5	6.0	13.5
Jackson, Miss.	18 0	18.0	5.5	10.0
Vicksburg	18.0	18.0	5.0	8.0
Jack'ville, Fla.	19.0	20.0	7.0	10.0
Miami	21.0	21.0	7.0	13.0
Pensacola	21.0	21.0	7.0	13.0
Tampa	20 0	20.0	7.0	11.0
Lexington, Ky.	17.0	18.0	5.0	10.0
Covington	17.0	18.0	5.0	10.0
Louisville	16.5	17.5	5.0	10.0
Corbin	18.0	19.0	5.0	15.0

A third grade "Kyso Green" is sold at a price generally 2 cents below the price on the regular grade.

In addition to the state tax of 4 cents on gasoline, Montgomery has city and county tax of 2 cents on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery and Birmingham state taxes add 1-cent tax. To Mobile state tax add 1-cent city tax and 2½ cents county tax.

Effective April 2 price to dealers 2 cents under posted tank wagon price.

*An additional discount of 1 cent is offered to dealers effective October 6.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Atl'tic City, N.J.	16.2	16.7	3.0	11.5
Newark	15.2	15.7	3.0	8.5
Annapolis, Md.	16.7	17.2	4.0	10.0
Baltimore	15.9	16.4	4.0	8.0
Cumberland	17.7	18.2	4.0	13.0
Wash'g'n, D. C.	15.4	14.9	2.0	10.0
Danville, Va.	18.5	19.0	5.0	11.3
Norfolk	17.0	17.5	5.0	10.3
Petersburg	18.0	18.5	5.0	11.3
Richmond	17.0	18.0	5.0	10.7
Roanoke	18.7	19.2	5.0	12.0
Charles'n, W.Va.	17.2	17.7	4.0	11.5
Parkersburg	15.9	16.4	4.0	10.2
Wheeling	17.1	17.6	4.0	11.4
Charlotte, N. C.	19.5	20.0	6.0	10.7
Hickory	20.2	20.8	6.0	12.6
Mt. Airy	20.2	20.7	6.0	12.5
Raleigh	19.9	20.4	6.0	12.2
Salisbury	19.0	19.0	6.0	12.5
Charleston, S.C.	18.0	18.5	6.0	10.3
Columbia	19 9	20.4	6.0	12.2
Spartanburg	20.2	20.7	6.0	12.5

Two and one-half cents per gallon discount off tank wagon price of gasoline to dealers except Washington, D. C., and States of Maryland and New Jersey, where discount is 3½ cents.

Prices shown above are for standard gasoline.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	10.7	6.23
V.M.P. naphtha	12.7	7.23
Cleaners' naphtha	15.2	9.23
Stanisol	15.2	9.23

Tank wagon prices f.o.b. Chicago January 6, 1932. Each of above prices subject to discount of 1 cent per gallon for 150-gallon lots if covered by contracts.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Albany, N. Y.	15.5	16.5	3.0	9.5
New York*	14.0	16.0	3.0	9.0
Buffalo	15.5	16.5	3.0	8.5
Rochester	15.5	16.5	3.0	8.5
Syracuse	17.3	17.3	3.0	9.0
Boston, Mass.	15 0	16.0	3 0	8.5
Augusta, Me.	17.3	18.3	4.0	9.0
Manch'tr, N. H.	16 9	17 9	4 0	8.5
Burlington, Vt.	17.8	18.8	4.0	9.5

*Prices in steel barrels.

PACIFIC COAST TERRITORY

Standard Oil Co. of California*

	Gasoline Tank truck	Gasoline Posted retail	Incl'ds tax of	Kero. tank wagon
Fresno	12.5	16.5	3.0	17.0
San Francisco	12.5	16.5	3.0	15.5
Los Angeles	12.0	16.0	3.0	15.5
Reno, Nev.	16.0	20.0	4.0	19.0
Portland, Ore.	14.0	14.0	4.0	16.5
Seattle, Wash.	15.0	15.0	5.0	16.5
Tacoma	15.0	15.0	5.0	16.5
Spokane	18.5	20.0	5.0	20.5
Phoenix, Ariz.	14.5	17.0	5.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 1 cent.

*Retail prices posted by Standard Stations, Inc., a subsidiary.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
N. Orleans, La.	19 0	19.0	6.0	†10.0
Baton Rouge	18 0	18 0	5 0	†12.0
Alexandria	19.0	19.0	6 0	10.0
Lafayette*	19 0	19 0	6 0	†10.0
Lake Charles*	19 0	19 0	6.0	†12.0
Shreveport	18 0	18 0	5 0	†12 0
Knoxville, Tenn.	22 5	22 5	7 0	13.5
Memphis	20.5	20.5	7.0	9.0
Chattanooga	22 0	22 0	7.0	11.0
Nashville	21.5	21.5	7.0	12.5
Bristol	21.0	21 0	7 0	14.0
Lt. Rock, Ark.	19.0	19.0	6.0	11.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Kerosene prices in Louisiana include 1 cent tax except New Orleans where tax is 2 cents.

Two-cent discount off gasoline and kerosene tank wagon price to dealer and commercial accounts.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline Tank wagon	Gasoline Service station	Incl'ds tax of	Kero. tank wagon
Omaha	15.9	16 9	4.0	9.25
McCook	17 0	17.0	4.0	10.75
Norfolk	17.75	18 75	4 0	9.75
N. Platte	18.0	18 0	4 0	10.50
Scottsbluff	17.0	17.0	4.0	9.0

Note—Dealers' discount allowed as follows: Red Crown Ethyl, 3 cents off station price; Red Crown, 2½ cents off normal service station price; Nebraska Blue (third grade), 1 cent off normal service station price.

STANOLIND FURNACE OIL IN CHICAGO

Effective July 1, prices f.o.b. Chicago, tank wagon prices: 1 to 99 gallons, 8 cents; 100 gallons or more, 6 cents.

Stanolex Fuel

Effective May 9, f.o.b. Chicago, tank wagon prices: 1 to 199 gallons, 7 cents; 200 gallons or more, 5 cents. Sinclair met this by bringing down the price of its No. 3.

Fuel Oils

Chicago tank wagon prices (in lots of 400 gallons and over): 38-40 straw distillate, 6 cents; 32-36 gas oil (light zero), 5.5 cents; 32-36 gas oil (industrial), 5.25 cents; 28-30 zero fuel oil, 5 cents; 24-26 fuel oil, 4.25 cents; 18-22 fuel oil, 3.75 cents.

TANK WAGON CHANGES

The Standard Oil Co. (Indiana) advanced the tank wagon and service station prices on gasoline throughout its territory 1 cent a gallon with the following exceptions: In Quincy, Ill., the service station price was advanced from 14.2 cents a gallon to 16.3 cents; Sioux Falls, S. Dak., tank wagon and service station advanced from 16.9 cents each to 17 cents; Detroit, Mich., and Wichita, Kans., unchanged. The tank wagon price of kerosene was advanced in Des Moines, Iowa, from 8.1 cents to 9.4 cents; Mankato, Minn., 8.1 cents to 9.8 cents; Springfield, Mo., 7 cents to 8.6 cents; St. Joseph, Mo., 7.6 cents to 8.2 cents; Detroit, Mich., 9.1 cents to 10.8 cents; South Bend, Ind., 8.1 cents to 10.6 cents; Wichita, Kans., 6.1 cents to 7.9 cents.

The Atlantic Refining Co. made a uniform raise of one-half cent a gallon April 16 in tank wagon and service station prices in the following cities: Springfield, Mass., to 16.5 and 17.5 cents; Worcester, Mass., to 16.3 and 17.3 cents; Boston, Mass., to 15.5 and 16.5 cents; Providence, R. I., to 14.5 and 15.5 cents; Hartford, Conn., 15.5 and 16.5 cents; New Haven, Conn., to 15.6 and 16.6 cents. Tank wagon prices of kerosene were reduced on the same date as follows: Boston, from 9.5 cents to 8.5 cents; Hartford and New Haven, Conn., 10 cents to 8.5 cents.

The Continental Oil Co., April 14 advanced the tank wagon and service station prices of both gasoline and kerosene 1 cent in Montana, Wyoming and eastern Colorado, and of gasoline only in New Mexico. The gasoline prices in Boise and Twin Falls, Idaho, and kerosene prices in Salt Lake City, Utah; Albuquerque.

(Continued on Page 59)

CRUDE OIL PRICES

(Continued from Page 37)

siana, Gulf Refining Co. and Louisiana Oil Refining Co., April 11, 1932. Urania posted by H. L. Hunt, Inc., and Louisiana Oil Refining Co; East El Dorado by Magnolia Petroleum Co., effective April 6, 1932; by Gulf Refining Co., effective April 11, 1932; Stephens, Ark., by Louisiana Oil Refining Co. and Atlantic Oil Producing Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (Apr. 1, 1932)*	$ .75
Luling (Apr. 1, 1932)*	.64
Mirando (Apr. 1, 1932)*	.90
Pettus (April 11, 1932)‡	1.00
Salt Flat (April 11, 1932)‡	.75
Thrall§	
Lytton Springs (Lockhart) (Apr. 1, 1932)*	.94
Dobrowolski¶	
Same as Mid-Continent gravity scale up to and including 38-38.9°.	
Somerset¶	
Same as Mid-Continent gravity scale up to and including 38-38.9°.	

*Magnolia Petroleum Co., The Texas Company. Humble Oil & Refining Co. posted 80 cents for Mirando, April 11. §Thrall prices same as North Central Texas less 19½ cents per cwt. freight. ¶Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products. ‖Pioneer Oil & Refining Co. ‡Humble Oil & Refining Co.

MIDDLE WESTERN STATES

Ohio Oil Co.

(Effective April 11, 1932)

Lima	$1.15
Wooster	1.25
Illinois	1.10
Indiana	.75
Princeton	1.10
Plymouth	Shut in
Western Kentucky	1.05
Midland, Mich. (Oct. 9, 1931)*	.55
Dundee, Mich.†	
Same as Stanolind Crude Oil Purchasing Co.'s Mid-Continent gravity scale	
Upper and Lower Traverse Sands, Mich.†	
.....Same as Mid-Continent gravity scale	
Somerset, Ky. (April 12, 1932)	.80
Hart County, Ky. (April 16, 1932)‖	.85

*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment. ‡Posted by Stoll Refining Co. Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and delivered through own pipe line.

MEXICO

Panuco*	$ .47

*F.o.b. ship, based on March transactions and exclusive of production and export taxes and bar dues.

CANADA

Ontario (Nov. 3, 1931):	
Petrolia*	$1.90
Oil Springs*	1.97
Alberta (Aug. 24, 1931):	
Turner Valley†:	
Crude oil 45-45.9	2.03
Crude oil 50 and above	2.65
Crude naphtha	3.12
Discolored naphtha	2.83

*Imperial Oil, Ltd. †Imperial Oil, Ltd., and Regal Oil & Refining Co.

Of Interest to Sales Departments

National Independent Oil Association Now Completely Organized

ST. LOUIS, Apr. 15.—The permanent organization of the National Independent Oil Association was completed here this week at a meeting held at the Hotel Statler. Independent jobbing interests from 32 states and the District of Columbia were represented. C. Y. Hinchey, elected manager of the association, announced that 40 additional memberships were approved during the meeting here.

W. R. McCain, of the Purity Oil Co., Springfield, Mo., was elected president. Other officers are: R. J. Brown, the R. J. Brown Co., St. Louis, Mo., vice president; S. W. Rusk, Rusk Oil Co., Philadelphia, Pa., chairman board of directors; F. A. Muench, Diamond Kerosene Co., Carlinville, Ill., secretary-treasurer. The new association succeeds the Independent Oil Men of America, for several years an active association of independent jobbers. The new headquarters will be in St. Louis.

The association went on record as favoring the tax on pipe lines now being sponsored in Congress as a part of a general revenue bill. Mr. McCain said the pipe lines give the larger companies a competitive advantage over the independents and the lack of regulation and taxation of the pipe lines likewise is unjust to the railroads.

In addition to the officers the following board of directors and executive committee were elected:

Board of Directors—Fred E. Bergfors, Quincy Oil Co., Quincy, Mass.; A. L. Lommel, Bartles-Shepherd Oil Co., Waterloo, Iowa; F. A. Muench, Diamond Kerosene Co., Carlinville, Ill.; E. H. Hilpp, Kentucky Consumers Oil Co., Louisville, Ky.; Floyd Casey, Master Petroleum Co., Waco, Tex.; S. W. Rusk, Rusk Oil Co., Philadelphia, Pa.; Dean Kimmel, Kimmel Oil Co., Hiawatha, Kans.; J. C. Nourse, Nourse Oil Co., Kansas City, Mo.; J. M. Koch, Quaker State Oil Refining Co., Oil City, Pa.; H. A. Rohde, Rohde-Deuster-Hinkley Oil Co., West Allis, Wis.; W. G. White, the Goyer Co., Greenville, Miss.; Arnold W. Craft, Craft-Laird Oil Co., Avoca, Pa.; C. F. Sloane, Sloane-Forsberg Oil Co., Oklahoma City, Okla.; L. S. Scott, Loughborough Oil Co., Washington, D. C.; and D. E. Fletcher, Fletcher & Barger Oil Co., Ironton, Mo.

Executive Committee—E. H. Hilpp, Kentucky Consumers Oil Co., Louisville, Ky.; F. A. Muench, Diamond Kerosene Co., Carlinville, Ill.; A. L. Lommel, Bartles-Shepherd Oil Co., Waterloo, Iowa; and D. E. Fletcher, Fletcher & Barger Oil Co., Ironton, Mo.

MOTORISTS PAY 8-CENT TAX

The highest gasoline tax now paid by motorists is in Pensacola, Fla., where a city tax of 1 cent is added to the state levy of 7 cents, according to William J. Gottlieb, vice president of the New York Automobile Club, which is affiliated with the American Automobile Association. Mr. Gottlieb said that Mobile, Ala., takes second place and has a three-fold levy, consisting of a 1½-cent county tax, a 1-cent city tax and a 5-cent state tax, making a total of 7½ cents.

MUST SHOW VENDING LICENSE

CHATHAM, Ontario, Apr. 16.—To check alleged bootlegging of gasoline, new amendments to the Alberta fuel oil act make it necessary for anyone vending fuel oil or gasoline from any vehicle to take out a license which is to be shown in a conspicuous place on the vehicle.

GASOLINE CONSUMPTION IN JANUARY SHOWS DECREASE

A decrease of 21,725,000 gallons in this country's consumption of gasoline in January, 1932, as compared with that of the same month in 1931 is indicated by figures compiled by the American Petroleum Institute. The estimated total consumption in the United States in January of this year is given as 1,085,285,000 gallons and that in January of last year 1,107,010,000. The estimated daily average consumption in January, 1932, was 35,009,000 gallons, as compared with 35,710,000 gallons on the same month last year, a falling off of 1.96 per cent. The table showing the estimated consumption by states, along with the comments of the American Petroleum Institute, follows:

"The figures set out below, which are based upon the quantity of gasoline sold or offered for sale, as reported by wholesalers and dealers in the states listed, under provisions of the gasoline tax or inspection laws, reflect, as nearly as it has been possible to obtain it, the consumption of gasoline during January, 1932, with previous month and year ago comparisons.

"While it is felt that the figures herewith are fairly comparable, it must be borne in mind that more or less widespread tax evasion and changes in the basic laws under which the figures were collected over the period compared, may have disturbed the comparability of the figures. It is, therefore, not correct to base percentage changes in demand upon the figures presented herewith. All demand calculations used by the American Petroleum Institute are based upon Bureau of Mines monthly statistics, which we regard as being more truly indicative of actual consumption. As we see the figures set out below, they represent a break-up, as nearly correct as it is possible to obtain it, by states, of the total demand in the United States, as calculated from Bureau of Mines monthly statics.

GASOLINE CONSUMPTION BY STATES

	Month of— Jan., 1932 (gallons)	Jan., 1931 (gallons)
Alabama	11,232,000	12,575,000
Arizona	5,509,000	5,850,000
Arkansas	(*)	.....
California	102,210,000	100,740,000
Colorado	10,910,000	12,037,000
Connecticut	15,694,000	14,924,000
Delaware	2,851,000	2,258,000
Dist. of Columbia	7,318,000	6,489,000
Florida	20,697,000	22,365,000
Georgia	16,733,000	17,093,000
Idaho	2,619,000	2,961,000
Illinois	67,403,000	65,609,000
Indiana	32,398,000	31,976,000
Iowa	24,227,000	27,814,000
Kansas	24,000,000	26,815,000
Kentucky	12,075,000	12,396,000
Louisiana	13,533,000	13,928,000
Maine	5,381,000	4,460,000
Maryland	12,955,000	12,337,000
Massachusetts	35,727,000	33,836,000
Michigan	56,036,000	54,272,000
Minnesota	26,039,000	28,269,000
Mississippi	†7,760,000	8,083,000
Missouri	35,170,000	31,848,000
Montana	3,336,000	4,159,000
Nebraska	12,932,000	16,334,000
Nevada	1,318,000	1,131,000
New Hampshire	3,596,000	2,959,000
New Jersey	47,799,000	46,434,000
New Mexico	3,161,000	3,594,000
New York	105,664,000	98,946,000
North Carolina	22,309,000	21,050,000
North Dakota	3,722,000	6,298,000
Ohio	64,476,000	63,371,000
Oklahoma	21,287,000	24,510,000
Oregon	10,466,000	10,323,000
Pennsylvania	71,689,000	81,217,000
Rhode Island	7,044,000	6,006,000
South Carolina	8,282,000	8,987,000
South Dakota	5,832,000	8,906,000
Tennessee	15,236,000	15,215,000
Texas	54,999,000	61,059,000
Utah	3,506,000	3,800,000
Vermont	2,215,000	2,124,000
Virginia	16,464,000	15,658,000
Washington	15,289,000	18,912,000
West Virginia	8,275,000	8,060,000
Wisconsin	26,119,000	26,879,000
Wyoming	1,792,000	2,143,000
Total	1,085,285,000	1,107,010,000
Daily average	35,009,000	35,710,000
Decrease from previous year:		
Amt. of dec.	21,725,000	.....
% dec. in dly. average	1.96%	.....

*Not available on date of publication. †Estimated.

LOW PRICES MAY FORCE AGREEMENT WITH SOVIET

NEW YORK, Apr. 18.—Failure of British marketing companies to renew an agreement with the Soviet marketing agency, the Russian Oil Products Co., Ltd., is keeping gasoline markets in the United Kingdom in a depressed condition, with motor fuel selling under cost in many instances.

The increase in American crude and gasoline prices, together with the depreciation in sterling, has made retail gasoline prices in England "totally unremunerative," according to statements by British oil interests, and because of this condition it is expected that the British combine will be forced to meet the terms of the Soviet. The agreement with the Soviet company, which ran for three years, expired on April 1, this year, marking the end of a bitter price war between the Soviet and leading British companies.

COMPANY FOR IRAQ MARKETS

NEW YORK, Apr. 18.—Rafidain Oil Co., Ltd., has been registered in London with nominal capital of £100 to supply and distribute gasoline, kerosene, and fuel oil throughout Iraq. The new company is controlled by interests affiliated with the Iraq Petroleum Co., Ltd., including Standard Oil Co. (New Jersey), Standard Oil Co. of New York, and Gulf Oil Corp.

DENY STORY OF ENDING TIRE PRICE DISCOUNTS

NEW YORK, Apr. 18.—Officials of the Rubber Manufacturers Association have issued a denial of reports that they were conferring with representatives of the National Tire Dealers Association on the question of eliminating the practice of granting discounts on sales of tires in large quantities to oil companies and other large users.

The recent action on the part of major oil marketing companies in inaugurating the sale of tires and tubes at their owned and controlled retail filling stations has aroused criticism in some quarters of the rubber industry.

TEXAS OUSTER HEARING

AUSTIN, Tex., Apr. 18.—Dist. Judge J. D. Moore has ordered that testimony begin May 9 in the State's suit to oust 15 major oil companies and two petroleum associations from Texas for alleged anti-trust law violation.

He fixed that date for the appearance of R. C. Holmes of New York, president of The Texas Corporation, and other officials, one of the defendants to appear in Austin before Special Commissioner George E. Shelley, for interrogation by Atty. Gen. James V. Allred. The testimony of President Holmes and other officials later will be presented to Judge Moore during the trial of the suit proper, Allred said.

GASOLINE TAX RECEIPTS SHOW BIG FALLING OFF

TOPEKA, Kans., Apr. 18.—There was a drop of $500,000 in the net receipts of the gasoline tax in Kansas in the year ending March 31, compared with the preceding year. The net collections for the last gasoline tax year were $8,373,802.85 and in the year ending March 31, 1931, the net collections were $8,939,940.33. Whether this was due to tax evasions under the new law or an actual reduction in gasoline consumption was not disclosed by Seth G. Wells, state oil inspector. He pointed out, however, that under the new law 24.2 per cent of the gasoline sold was exempt from the tax while in the previous year the refunds for tax exempt gasoline was only 18.7 per cent.

The 1931 legislature changed the gasoline tax law so that any person using gasoline for other purposes than fuel for motor cars and trucks could purchase gasoline without payment of the tax. Under the old law everyone paid the tax when the gasoline was purchased and then claimed a refund for that part of the gasoline used for tractors, stationary engines and other purposes. Mr. Wells pointed out that there was an actual increase of $53,550.51 in the sales of gasoline in Kansas in the last year as compared with the previous year.

UNITED STATES LOSING BRITISH OIL BUSINESS

NEW YORK, Apr. 18.—While shipments of crude petroleum and refined products from the United States into Great Britain during 1931 exceeded those of any other country in gallonage, American participation in the total oil trade of the United Kingdom amounted to only 26.2 per cent of the total last year, as contrasted with 33.8 per cent in 1930. Imports of crude and products into England last year, with comparisons for 1930 (by countries) were as follows:

Country of origin—	Gallons— 1931	1930
United States	578,986,880	814,354,022
Persia	440,016,872	533,451,452
Dutch West Indies	359,627,047	275,893,857
Russia	268,296,122	264,462,033
Rumania	199,541,759	128,463,160
Mexico	121,674,314	149,369,745
Venezuela	72,262,952	72,321,771
Trinidad	58,704,792	73,497,494
Dutch East Indies	53,996,491	43,676,469
Straits Settlements	18,408,529	25,004,226
Egypt	9,590,343	9,666,057
Colombia	.....	6,336,339
Others	27,188,862	7,225,608

The sharp increase in imports from "other countries," amounting to almost 300 per cent, was due to the larger shipments from various European countries which have been developing refining facilities.

MONA MOTOR OIL CO. OFFICERS

COUNCIL BLUFFS, Iowa, Apr. 18.—Reorganization of the Mona Motor Oil Co. of Council Bluffs and Toledo, Ohio, was effected with the election of the following officers, all identified with the Barnsdall interests in Tulsa: President, E. B. Reeser; vice president, H. M. Edinger; general manager, Clyde Fuller. The resigning officers were S. A. Searle, Sr., president; F. H. Searle, vice president in charge of the Toledo plant, and E. D. Judd, secretary-treasurer.

THAYERS EXTENSION

CHATHAM, Ontario, Apr. 16.—Thayers, Ltd., gasoline distributors heretofore operating in the western Ontario and Niagara districts with headquarters at London, Ontario, have entered the Toronto district through the purchase of the distributing outlets of Nu-Test Co. of that city. Additional outlets will be provided this year in the Toronto area.

EXCESSIVE IMPORTATIONS CUT DOMESTIC DEMAND FOR CRUDE

By James McIntyre

The unlooked for decline in the demand for crude oil in the East Texas and the Oklahoma City fields in the very recent past has been one of the unpleasant surprises of the week. The fact that the Oklahoma City allowable production is more than the producers can find a market for, and the action of a number of large crude oil producers and buyers in the East Texas Field in cutting their production and purchases to 62 bbls. per day per well, has set oil men to asking what the sudden falling off in demand is all about.

The only reasons put forth for the inability of producers to market their crude even in fields that are deeply curtailed in production is that the imports have increased recently to proportions that make them a menace to the domestic sources of supply.

In the week ending April 2, for example, the daily average imports of all oils, crude gasoline, fuel oil and gas oil were 617,286 bbls. per day. The average for last year was 223,455 bbls. per day, according to the weekly figures of the American Petroleum Institute. The highest average in the last half of 1931 was that of October, 253,258 bbls. per day.

In the week ending April 2 the average imports of crude exceeded the October crude imports by 267,886 bbls. per day. The average gasoline exports exceeded those of last October by 60,861 bbls. per day. If we figure that it takes an average of 3 bbls. of the foreign crude to make 1 bbl. of gasoline, the above named increase in gasoline represents in itself an increase of 182,583 bbls. of crude oil which, added to the 267,886 bbls. of crude oil increase, gives us a total crude oil increase in imports of 450,469 bbls. per day.

It is true that in the week before and the week after the record breaking week of April 2, the imports were lower, but the average for the three weeks from March 20 to April 9 both inclusive was much too high for the safety of the domestic situation.

In the week ending April 2 an average of 397,857 bbls. of crude oil was brought into the country. Last October an average of 135,971 bbls. per day was imported. For the three weeks ending with April 9 of this year an average of 239,571 bbls. per day of crude oil was recorded.

In the week of April 2, 94,571 bbls. of gasoline representing 283,713 bbls. of crude, on a ratio of 3 to 1, was imported. In the three weeks ending with April 9, an average of 62,095 bbls. of gasoline the equivalent of 186,285 bbls. of crude, came into the country, while in October, 1931, the most active importing month in the last half of the year only 33,710 bbls. per day of gasoline was brought in, or the equivalent of 101,130 bbls. per day of crude oil.

The Magnolia Petroleum inaugurated a new curtailment movement in the East Texas Field when it announced that effective at 7 a. m. on April 28 and until further notice it would produce from its own leases in the East Texas Field 62 bbls. per day seven days a week and that it would purchase from its connections on the same basis. This announcement was followed by similar action by the Stanolind Crude Oil Purchasing Co., East Texas Refining Co., Humble Oil & Refining Co., The Texas Company and the Tidal Refining Co. It is expected to result in a voluntary curtailment of 5 bbls. per day per well under the allowable on the part of other producers and buyers. Already about half the wells in the field are affected by the 62-bbl. per well policy. The Magnolia Petroleum Co. takes oil from nearly 600 wells; Stanolind and Humble together take oil from 1,042 wells; the East Texas Refining Co., 128 wells; Tidal Refining Co., 250 wells; while the Texas Pipe Line Co. and the Empire Pipe Line Co. feeding the Texas-Empire take oil from 425 wells. No reason was given for these cuts in runs, but a group of large independent operators in the field freely blame the excessive importations of oil.

The Oklahoma City operators and the Oklahoma Corporation Commission were given a shock when it was found at the last Corporation Commission hearing that instead of an increase in crude oil nominations there would be a small decrease. It is not surprising that the producers, like their East Texas brethern, attributed it to the oversupply of Venezuelan, Mexican and Colombian crude brought in recently.

For the past two years the importers have been going along with the domestic producers in the movement to prevent an oversupply of crude aboveground. Month after month they co-operated with American producers by keeping their imports down. In 1930 imports of all oils never exceeded 299,903 bbls. per day covering a period of a month and in 1931 they were kept down to a maximum of 267,774 bbls. per day. It is no wonder that the average of 617,286 bbls. a day in the week of April 2 threw consternation into the ranks of the domestic producers.

High Spots in Field News

NORTH LOUISIANA, ARKANSAS, MISSISSIPPI

Wildcatting activity increasing. Work being resumed on tests shut down in all three states of district.

ROCKY MOUNTAIN AREA

Continued rush for prospecting permits in public domain. Unitization or co-operative development included in conditions.

CALIFORNIA

State begins injunction proceedings to save gas in Dominguez Field. Sharp warning on curtailment by Umpire Anderson.

KANSAS

Potential of Voshell Field declined from previous month. New wildcats in Reno County surrounding largest gas area in state.

WEST AND NORTH TEXAS

Reductions in allowables for Penn Pool, Big Lake and Howard-Glasscock. New wildcats in Irion and Howard. Play in Archer County.

EAST TEXAS

New locations show remarkable increase. Movement to cut production to 62 bbls. per well. Now 5,000 completions with 30 wells unconnected.

GULF COAST

New tests in Montgomery County area. West gas well in Conroe district disappointing but operators not discouraged. Deep wildcat in Willis District.

OKLAHOMA

First Cleveland sand well in Oklahoma City Field made 1,134 bbls. in 22 hours. Sacred Heart wildcat swabbing 43 bbls. daily from Simpson sand, opening new territory.

SOUTHWEST TEXAS

Much new drilling in Southwest Texas, particularly along Balcones Fault zone. Two new Edwards lime pools probable in Caldwell County. Fourteen new locations reported.

Late Fields

OKLAHOMA

Indian Territory Illuminating Oil Co.'s No. 2 Little, in Section 27-11-3w, in the southwest part of the Oklahoma City Field, swabbed and flowed 1,134 bbls. of oil in 22 hours from the Cleveland sand at 5,776-88 feet. It is the first Cleveland sand in the field.

Barnsdall Oil Co.'s No. 1 Gray, in Section 25-6-4, Pottawatomie County wildcat, swabbed 43 bbls. of oil from the Simpson sand at 3,343-53 feet. It was drilling deeper at 3,412 feet.

Phillips Petroleum Co.'s No. 1 Berg, in Section 26-11-3w, flowed 75 bbls. of oil in 15 minutes while testing, from the Wilcox sand at 6,541-87 feet. It is a half-mile extension to the Oklahoma City Field. It is believed there is not sufficient gas to flow the oil.

KANSAS

Vickers Petroleum Co. and T. C. Johnson's No. 1 Claussen, C SE NW Section 31-15-10w, Ellsworth County, is a new wildcat location. It is located about 5 miles west of the Stoltenberg Pool and is in an area that has been core drilled.

Another wildcat preparing to start is Martin and others' No. 1 Yoder, C NW NW Section 15-24-5w, Reno County. The rig has been built and the crew was rigging up.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., Apr. 18.—Smith and Capp's No. 1 Duval County Ranch Co., Survey 576, Duval County, 2 miles southwest of government wells extension, at 2,413 feet blew in Sunday and is running wild making about 40,000,000 feet of gas. It opens a new pool and two weeks ago Seacord and Putnam opened a pool at 1,574 feet, 3 miles north.

MAGNETIC STORM

The Tucson, Ariz., observatory of the U. S. Coast and Geodetic Survey reports a moderate magnetic storm starting at 6 a. m. (C.S.T.) on April 13 and ending at 8 a. m. (C.S.T.) April 15. The telegrams follow:

"Storm began thirteenth. Twelve. Moderate."

"Storm ended fifteenth. Fourteen."

Allegany Gas Co. Has 25,000,000-Foot Gas Well in Tioga Field

WELLSBORO, Pa., Apr. 16.—The Allegany Gas Co., which opened the Tioga gas field, has another big was well in No. 1 Charles Thomas in Farmington Township. It was completed on Friday. The well tested 25,000,000 feet in 24 hours and was then shut in. It is the eighth gas well of this company and the thirtieth in the Tioga Field.

The next well due is the North Branch Development Co.'s No. 1-B Colegrove, in Lawrence Township, but the Penn United Gas Co. will soon after be due with its No. 2 Ida Russell in Farmington Township. This well is located 1,000 feet north of a 10,000,000-foot gasser. No. 1 Ida Russell.

Seismograph Tests

A Humble Oil & Refining Co. crew of geophysicists is making seismographic tests in Potter County to determine the subsurface geology of lease holdings in northern Pennsylvania and southern New York State of the Lycoming Natural Gas Co., which, like the Humble, is a Standard Oil Co. (New Jersey) subsidiary. The personnel of the crew is as follows: H. G. Patrick, chief of party; D. H. Gardner, instrument operator; O. D. Brooks and C. C. Mason, computers; R. S. Epperson, shooter; instrument truck driver, H. C. Stewart. Stuart Sherar, seismographic expert for the Humble Oil & Refining Co., with headquarters in Houston, Tex., is in this territory for a short time to work out major problems which will shortly resolve into routine procedure. Mr. Sherar is making his headquarters in Coudersport.

Wells Corp. has shut down after drilling to 5,581 feet in No. 1 County Farm, in Charleston Township. The East Penn Development Co. has reached a depth of 5,608 feet on the Davey farm in Richmond Township, and was drilling at 3,475 feet on the Jesse Smith farm in Lawrence Township, and at 5,151 feet on the Emporium Lumber Co.'s property in East Fork Township, Potter County.

LEASEHOLDERS TEST REFUSAL OF PERMIT

AUSTIN, Tex., Apr. 18.—Two leaseholders in the East Texas oil field filed suits to restrain the Railroad Commission from interfering with drilling operations on their leases. The suits were filed in Travis County District Court.

Applications for permits to drill on their Gregg County holdings had been denied A. F. Bullard and J. D. Henderson by the Railroad Commission.

The plaintiffs stated their acreage was in proven territory; that there were no wells within 150 feet of their property and that there was danger of drainage unless they were permitted to drill and produce oil.

P. & R. CLOSES LAND OFFICE

The Producers & Refiners Corp. is preparing to close its Tulsa land and geological offices. This change in policy will in no way affect any other operations of the company, including its refinery in West Tulsa.

DEATH OF E. B. MILLER

E. Barger Miller, drilling contractor, well known in many Eastern and Mid-Continent fields, died Saturday in a Tulsa hospital. He was 65 years old. Mr. Miller had been in the oil business since he was a lad of 12, when he helped his father pump wells on a Pennsylvania oil lease. At 17 he was roustabouting in the Glade Run Field in Pennsylvania, leaving that at the age of 20 to dress tools in the Washington County Field, in the same State. He became a driller and next started contracting and he was engaged in this business in the Mannington Field in West Virginia in 1905 when he decided to move to Indian Territory. Bringing his tools with him he began drilling in what is now Oklahoma with J. C. Trees as a partner. The firm was dissolved about 1907 and shortly afterwards he formed a partnership with Harry C. Tyrrell, drilling in the Muskogee Field and the Glenn Pool.

Use of Small Tubing In East Texas Fields Discussed By Engineer

Experience in Other Fields Indicates It Will Prolong Flowing Life of Well

By J. M. McQuarrie and Martin Verhuel
Under the direction of M. Albertson, Shell Petroleum Corp., Dallas, Tex.*

The use of tubing of a size not larger than 2½ inches in diameter is obligatory in the East Texas Field, through orders of the Railroad Commission. In the early days of the field this size was practically standardized on by all of the operators. Recently, however, with the number of wells increasing rapidly in the field and the strict proration which is enforced, several operators, realizing that the allowed production will never approach the capacity of 2½-inch tubing, have turned to the use of 2-inch and, in many cases, smaller sizes of tapered strings, ranging in size from ⅜ to 1¼ inches.

The use of small and tapered tubing is not original with the field, but has been used successfully in many other areas. The advantages which may be expected from the use of tapered tubing will be discussed in order.

Prolonging Flowing Life

The results of using tapered tubing in prolonging the flowing life of a well in the East Texas area are not known at the present time. Representative wells in the prolific part of the field have not, as yet, ceased to flow through either the large tubing or casing and until this occurs, definite data on the advantoges of tapered tubing, in this respect, will not be known. The experience with this type of tubing in other fields justifies the expectation that flowing conditions will be maintained longer by its use than with the larger size of tubing, although conditions in this field as in all fields have different characteristics.

Conservation of Gas

At the present time it is generally agreed that all of the gas is in solution in the oil at the prevailing bottom-hole pressures. It is, therefore, natural to assume that gas-oil ratios cannot be controlled by any mechanical means until a decline in pressure has released gas from solution. Characteristic curves showing the gas-oil ratio obtained at different production rates through both 2½-inch tubing and a tapered string of 1-inch and 1½-inch is shown in Figure 1. It will be seen from these curves that at the higher rates of flow there is only a small difference in the gas-oil ratio with the different sizes of tubing. However, the minimum ratio is obtained in the tapered tubing while producing at a rate of from 5 to 10 bbls. per hour, while in the case of the 2½-inch tubing this minimum is reached at a rate of from 25 to 30 bbls. per hour. If a well is allowed to produce under steady flow with the present allowable, that is, 3 bbls. per hour, the gas-oil ratio with tapered tubing will be about 370 feet per barrel of oil and the same rate through 2½-inch tubing gives an approximate ratio of 455 feet per barrel of oil. This is a saving of 85 feet per barrel by the use of tapered tubing. It is, however, impractical to produce wells at the low rate because of paraffin troubles and at the higher rates of flow the advantage of a reduced gas-oil ratio is practically lost. The curves show a slight advantage in favor of tapered tubing but, considering the accuracy of the measuring instruments, the amount may be considered negligible. It may then be concluded that under the stop-cocking method of production, the gas-oil ratio is practically the same for all sizes of tubing.

Control of Production Rate

When the stop-cocking method of producing the wells is practiced, it is sometimes an advantage to have the reduced open flow potential of the small tubing. This reduces the necessity for the manual control of the production rate, as it is doubtful if the open flow rate of the small tubing, which ranges from 20 to 40 bbls. per hour, is high enough to be injurious to a well unless the bottom of the hole is close to the water level.

Initial Investment

A considerable saving of the initial investment can be effected by the use of tapered tubing. The prices and saving are as follows, for a well 3,600 feet in depth:

3,600 feet of 2½-inch upset tubing at $0.362 per foot		$1,303.20
3,600 feet of 2-inch upset tubing at $0.270 per foot		986.40
2,400 feet of 1-inch BM pipe at $0.092 per foot	$220.80	
1,200 feet of 1¼-inch upset tubing at $0.213 per foot	255.60	476.40

It will be seen that the use of a string of tubing consisting of 2,400 feet of 1-inch and 1,200 feet of 1¼-inch effects a saving of $826.80 over the 2½-inch and $520 over the 2-inch tubing. A further discussion of the saving which may be expected over the life of the field will be given later in this paper.

There are also some disadvantages to be mentioned in the use of tapered tubing.

Washing Wells

On account of the smaller sized tubing it takes a considerably longer time to wash a well into production. This additional time will amount to an average of one day per well. Care must also be taken that excessive pressures are not applied to the casing or tubing.

In cases of unexpected trouble, the well cannot be killed as quickly as with the larger sizes of tubing and, in extreme cases, probably could not be killed through this tubing without first making connections to establish a suitable back pressure.

Failure to Prolong Life

This is a situation which must be reckoned with although the experience of its use in other fields would indicate that the life would be prolonged at least a sufficient time to return the investment. A general statement of the financial possibilities follows:

Costs

With our somewhat limited knowledge of the decline of bottom-hole pressures at present, it is apparently safe to assume that the flowing life of the wells in the East Texas fields will reach a minimum of three years from the present date, if the present rate of withdrawal is not exceeded. Of course this is entirely a function of withdrawal and not of time, and changes in the allowables will necessitate a change in the estimate of the flowing life of the wells.

Case A: Assuming that the flowing life of the well will be three years and the rate of interest at 10 per cent per year, and the allowable production 60 bbls. per day:

Cost of 3,600 feet of 2½" tubing	$1,303.20
Cost of 2,400 feet of 1" and 1,200 feet of 1¼"	476.40
Saving in initial cost	$826.80
Interest on $826.80 for three years at 10 per cent per annum	248.00
Total	$1,074.80

Deducting this amount from the original cost of the tapered string of tubing, it is found that there is an unpaid balance of $228.40. Assuming a lifting cost of $0.04 per barrel for flowing wells and $0.12 per barrel for pumping wells would entail a saving of $4.80 per day, per well, or would require a flowing life of 48 days longer with the small tubing than with the large to pay out the entire cost of the small tubing.

In the above calculation, no allowance has been made for the salvage value of the tapered tubing nor for depreciation in the larger sizes. If these items are given a fair value the tapered tubing will about make a pay-out at the end of three years without any prolonged flowing life. On the other hand, if the flowing life is prolonged materially quite a large saving may be made. Assuming the above mentioned lifting costs and allowable production, the saving amounts to $144 per month or $1,728 per year, per well.

Theory and Design

No attempt has been made in this paper to discuss the rather involved theories of flowing oil wells as this ground has been covered in previous papers. The design also cannot be discussed at this time, as the conditions will undoubtedly change in the later life of the field and a perfect string cannot now be designed to take care of the future conditions. It is, however, advisable to use sizes which undoubtedly will be used in the final string so that only inexpensive changes will have to be made to obtain the greatest efficiency if tapered tubing is found to be beneficial in the prolonging of the flowing life.

Paraffin

Up to the present time no additional trouble has been experienced in the small tubing from paraffin. Both tapered and 2½-inch tubing will paraffin to complete stoppage if produced at low rates of flow. The tapered tubing will reach the stage of stoppage of production in a shorter time than the larger sizes. However, both apparently do not collect paraffin if flowed intermittently at a fair rate of about 20 bbls. per hour. The future paraffin troubles are, of course, unknown and may or may not be aggravated in the smaller sizes of tubing.

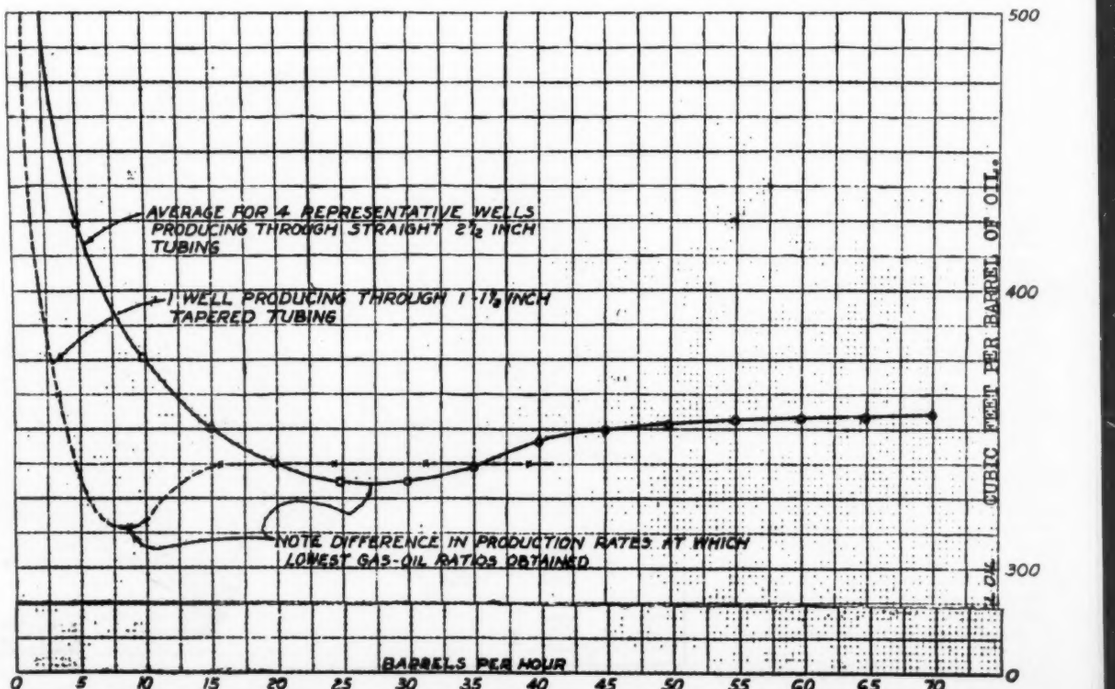

AVERAGE FOR 4 REPRESENTATIVE WELLS PRODUCING THROUGH STRAIGHT 2½ INCH TUBING
1 WELL PRODUCING THROUGH 1-1¼ INCH TAPERED TUBING
NOTE DIFFERENCE IN PRODUCTION RATES AT WHICH LOWEST GAS-OIL RATIOS OBTAINED
BARRELS PER HOUR
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70
300 400 500

Figure 1—Curves showing comparison of gas-oil ratios obtained by flow through small tapered tubing and straight 2½-inch tubing.

*Before Southwest district, A.P.I. division of production, Tyler, Tex.

Soil Survey Methods Are Essential Part of Any Corrosion Survey

Rough Relation Between Corrosiveness and Resistivity For Alkali Soils

By Scott Ewing
A.G.A. research associate, U. S. Bureau of Standards*

The work with which the Subcommittee on Pipe Coatings and Corrosion is concerned consists of two essential phases, namely: (1) To obtain information on the behavior of various types of coatings; and (2) to determine where coatings are necessary.

With regard to the investigation of protective coatings, one-fourth of the American Gas Association specimens were removed, tested and examined nearly two years ago. The preliminary results obtained have been instrumental in causing some manufacturers to improve the properties of their coatings. Many gas companies are now using more adequate coatings or none at all. When the first set of specimens was removed, there were no recognized methods of inspecting coatings. These methods are now becoming standardized, and before long they should be familiar to the pipe line operator. Hence, the properties of adequate coatings are becoming more evident, and the methods for determining the value of coatings are better understood.

The second set of A.G.A. specimens will be removed this summer. The coating manufacturers have agreed to furnish assistance in inspecting these coatings, which will add considerable data not otherwise obtainable. This set of specimens will have been buried long enough so that more definite conclusions about the coatings will be possible. The removal of the last set of specimens in 1936 should furnish definite information as to the coatings under test.

This paper is concerned with the second phase of the committee's work, the identification or location of corrosive soils. Material from various sources has been brought together in order to discuss this subject adequately. For the purpose of discussion, the methods have been divided into three groups: (1) Electrical methods; (2) chemical methods; and (3) soil survey methods. These methods will be briefly described and their limitations and merits will be discussed in the light of results which have been obtained with them. However, before we can adequately discuss the possibilities of the various methods, it is necessary to point out in a general way some of the characteristics of the soils where the methods will be used.

Soil Groups of United States

Not all soils are alike and the soils of the country can be divided into groups, the individuals in each group having certain common characteristics. These characteristics are produced almost entirely by the climate in which the soil has developed. Hence the seven soil groups found in the United States correspond roughly to seven climatic zones of the United States. The positions of the boundaries of the groups are not definite because one group gradually merges into another and because the boundaries are drawn with only a limited amount of information. The positions of these soil groups are shown in Figure 1. They are briefly described as follows:

Group 1 is limited to the extreme northern part of eastern United States. These soils are dark colored acid soils developed under coniferous forests.

Group 2 covers the northern half of eastern United States south of Group 1. They are acid soils developed under deciduous forests.

Group 3 covers the southern half of eastern United States. These soils are developed under a heavy rainfall and a subtropical climate and are as a rule more acid than the soils of Group 2.

Group 4 covers a strip extending from East Texas north to Minnesota. They are dark colored prairie soils with a grass cover and are somewhat acid.

Group 5 consists of another strip about 300 miles wide bordering Group 4 and west of it. These soils are also dark colored and have a grass cover, but they contain considerable lime at some depths. They are nearly neutral at the surface and alkaline in the subsoil.

Group 6 extends from the base of the Rocky Mountains eastward to the western boundary of Group 5. These soils differ from Group 5 in that the lime is nearer the surface and the soils are brown instead of black.

Group 7 includes the remaining arable land of the country, so far as it has been possible to classify it. These soils are developed under desert conditions of low humidity and little precipitation. They are light colored alkaline soils.

Electrical Methods

Since soil corrosion is generally considered to be an electro-chemical phenomenon, it is not unreasonable to suppose that some kind of electrical test of the soil would reveal its corrosive properties. Just as the old alchemists believed that it should be possible to find a remedy for all ills, so on the face of it, it should be possible to devise an instrument which would indicate on a scale how long the pipe would last in a given soil. Obviously, this instrument would be possible if there were only one cause of corrosion and if the instrument measured this cause.

Descriptions of most of the electrical methods for testing the soil for corrosiveness have been published. In all of these methods current is caused to flow from an iron or steel anode for a short distance through the soil. A more or less constant potential is applied to the electrode, and the magnitude of the current

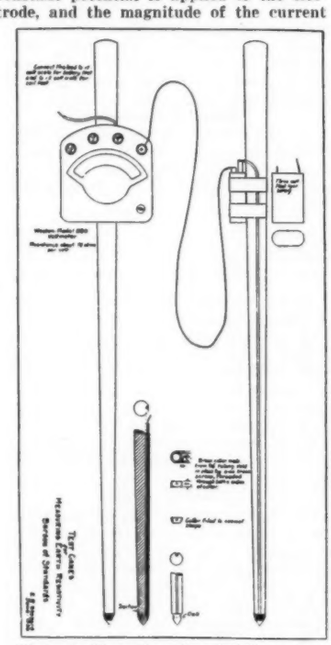


Figure 2—Shepard earth resistivity meter.

is supposed to indicate the corrosiveness of the soil; the greater the current the more corrosive the soil. In Shepard's canes, in which a potential of three volts is used, the ammeter in the circuit is calibrated in terms of soil resistivity and the circuit arranged to make the effects of all other factors as small as possible. (Figure 2.) The first instantaneous reading is the one used. With the Columbia rod the potential is that between a steel and a copper electrode in the soil, no battery being used. When the rod has been placed in position in the soil, the circuit is closed and the current is read every 10 seconds for a period of 40 seconds. The average current is taken as an indication of the corrosiveness of the soil. The Putnam method is similar to the Columbia rod in principle. It is a laboratory method in which a potential of 1.4 volts is applied to electrodes on opposite sides of a cubical cell and the current is read after it reaches a steady value. The theoretical argument upon which this method is based is plausible. The experimental work which tends to establish its soundness was unfortunately carried out with alkali soils only. The Corfield method is also a laboratory method. The loss in weight of a short piece of pipe, which is the anode, is taken to indicate the corrosiveness of the soil. This loss of weight is approximately proportional to the average value of the current over the 24-hour period.

Let us consider the magnitude of some of the quantities which enter into the measurement of soil corrosivity by these methods. Potentials which are probably responsible for soil corrosion are usually small. Shepard's measurements of the potential between mill scale and bright iron, or between electrodes in puddled and coarse granular soil, seldom give values above 0.5 volt. The measurements by Ganz show about the same maximum value. Higher potentials than this can be otabined, but they do not persist. Potentials of about 0.1 volt were found by Kuhn on pipes. Measurements made by the writer and others indicate that for current densities up to one milliampere

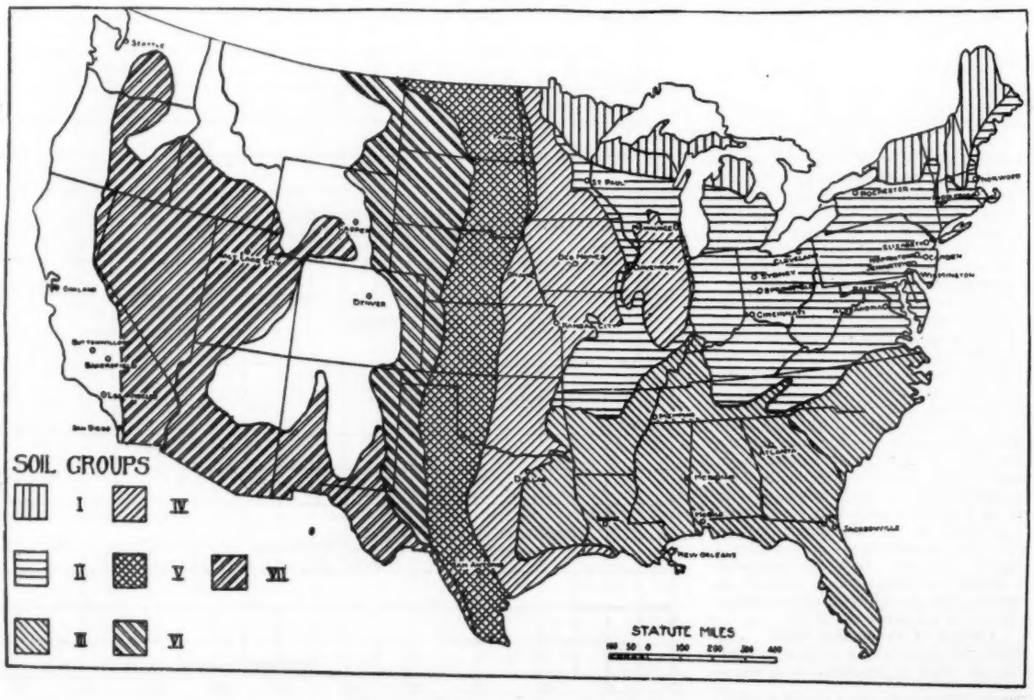


Figure 1—Soil groups of the United States.

*Before A.G.A. Distribution Conference, Birmingham, Ala. Publication approved by director of Bureau of Standards, U. S. Department of Commerce.

per square centimeter, which corresponds to a penetration of 0.46 inch in one year, the total polarization on anode and cathode is seldom greater than 0.6 volt.

Resistivity of Soil

In testing a soil of moderately high resistivity (1,500 ohm-cm.) with any of the so-far devised corrosivity-measuring instruments (in which the effective distance between the electrodes is at least 3 cm.), it is apparent that if a low potential, e.g., 0.5 volt, is applied, the high resistivity makes the current density on the electrodes so low that little polarization takes place, while if a higher potential of, say 3 volts, is applied, the effect of polarization on current flow would be almost negligible. In the 24-hour Corfield test in some soils the current drops to only a fraction of the initial value. Indications are that this dropping off is caused by drying out of the soil around the anode, which effect would not enter to any extent in ordinary corrosion. The Columbia rod devised by B. B. Legg takes this polarization effect into consideration to a greater extent than does any other device because of the low applied potential, but this potential is so variable with different soils that the significance of polarization becomes obscure. There are considerable data, which cannot be discussed now, which show that the Columbia rod measurements on a group of soils of moderately high resistivity do not differ greatly from resistivity measurements on these soils. Hence, although we know that other factors affect the current flow somewhat, they affect it to a small extent and in a very complicated way. For our purpose, therefore, we can discuss the merits of these devices by simply discussing the resistivity of the soil with respect to its relation to corrosiveness and the factors which affect it.

The resistivity of the soil depends upon: (1) The amount and kind of soluble material present; (2) moisture content; (3) texture; and (4) temperature. In western regions where the rainfall is light the soils sometimes contain considerable highly soluble material, usually chlorides and sulphates of sodium and potassium. These soils are almost always alkaline and sometimes contain soluble carbonates when they are highly alkaline. When the soil contains at least 0.2 per cent of soluble salt, in which case its resistivity is approximately 650 ohm cm. when saturated at 60° F., the amount of this soluble material can be determined with sufficient accuracy for many purposes. This is done by adding water to the soil until it is saturated, measuring the resistivity, correcting for temperature, and using a curve or table, appropriate for the cell in which the resistance was measured. When the resistivity is above 650 ohm cm. the effect of the difficulty soluble minerals such as lime and gypsum, with which the soil solution may be saturated, becomes appreciable. The resistance of any soil is very high when it is actually dry. Over the range favorable to plant growth, the resistance of any soil is very nearly inversely proportional to the square of the water content, expressed as percentage of the dry weight of soil. The resistance of any soil increases about 2 per cent for each centigrade degree increase in temperature.

As we pass from the western part of the country toward the east, the soil resistivity becomes higher. In the upper Mississippi Valley most of the soils have a resistivity of about 2,000 ohm-cm. as compared with values as low as 60 ohm-cm. in some western soils. And as we go still further east and south in general the resistivities are still higher, although the soils still often corrode pipes.

Resistivity and Pipe Line Life

Since western soils are generally alkaline and not acid, they are not particularly corrosive, except for the soluble salts which they sometimes contain, when they may become extremely corrosive. If the resistivity is below 500 ohm-cm. the soil is probably corrosive. The results obtained by A. B. Allyne of the Southern Counties Gas Co. of California indicate that there is a linear relation between soil resistivity and pipe life. The relation he has obtained is shown in Figure 3.

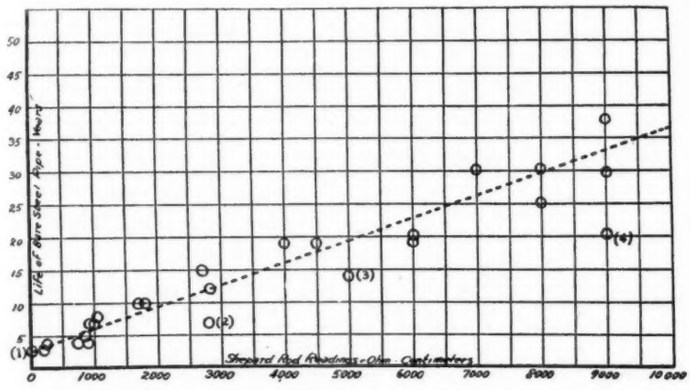


Figure 3—Shepard rod readings in soils of known pipe life, Southern Counties Gas Co., of California.

When we move further east, the available data indicate that the success of the resistivity method is not so marked. Engineers who have used this method in Texas and Oklahoma feel confident that there is at least a rough relation between corrosiveness and resistivity, and most of them feel that this relation is useful to them. In an analysis of the data of Weidner and Davis of pit and resistivity measurements on 58 miles of lines in Oklahoma, which they presented at the American Petroleum Institute meeting in Chicago in November, 1931, Gill finds that by protecting 26 per cent of the lines on the basis of soil resistivity measurements, 74.7 per cent of the corrosive places would be protected, the other 25.3 per cent being missed, while actually only 6.3 per cent of the lines are in corrosive soil. Gill's arbitrary method of deciding when the soil is corrosive appears to be entirely fair. Any other arbitrary boundary between "corrosive" and "not corrosive" soils would give about the same result, because the range in pit depths for each resistivity is about the same over the entire resistivity range.

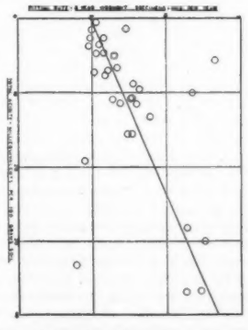


Figure 5—Relation between total acidity of soils and rate of pitting of ferrous specimens.

A little further discussion of the precision of resistivity measurements for determining corrosivity is instructive. Charles Fitzgerald, in his discussion of the above paper, presented in the form of a curve between pitting rate and resistivity, some of the results he obtained on his own lines in Texas (Figure 4). For any given resistivity there is a considerable spread in the individual points. If the distribution of pit depths for each resistivity follows the Law of Small Numbers or Poisson Distribution (which V. H. Gottschalk found to hold for the Bureau of Standards pit measurements), the standard deviation of the mean for each resistivity is usually less than one mil per year.

This means that one may measure the resistivity of the soils along the line, divide the soils into groups on the basis of their resistivities, and foretell with considerable confidence the average pitting rate within each group, provided a large number of tests are made. Hence, resistivity measurements along a line might be valuable for a statistical prediction of the behavior of the line as a whole. But if we wish to know in advance where the deep pits will occur, resistivity measurements are not so reliable. The distribution of pit depths for the inspection points having a resistivity of 800 ohm-cm. may be taken as a typical example. The average pitting rate for this resistivity is 10.7 ± 0.27 mils per year, but the probable error of a single observation is 2.0 mils per year. If one obtained, therefore, 800 ohm-cm. as the resistivity of the soil, one could say the pitting rate is between 8.7 and 12.7 mils per year and one would be right half the time. If one wished to be right 30 times and wrong only once all one could say is that the pitting rate is between 4.7 and 16.7 mils per year. A careful study of the data presented in the above papers, using statistical methods, would no doubt yield much valuable information about resistivity tests.

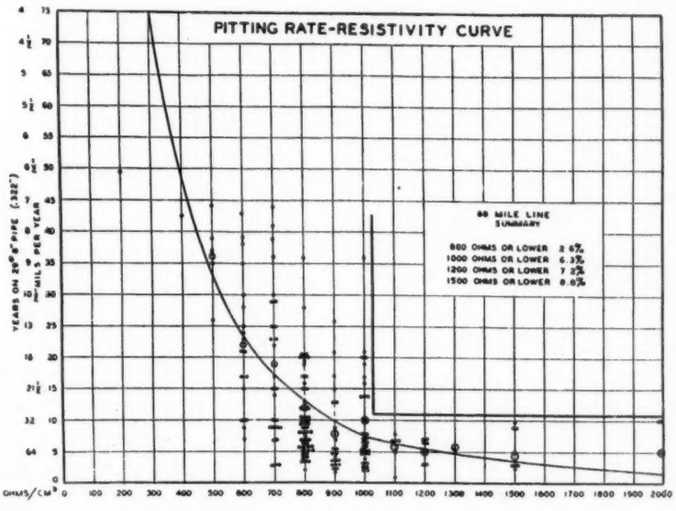


Figure 4—Fitzgerald's pitting rate—resistivity curve.

Reason for Failure

A possible reason for the failure to discover about 25 per cent of the corrosive places with resistivity measurements becomes apparent when we examine the properties of the soils in the region where the tests were made. Soil surveys of counties near the lines where the above resistivity measurements were made show many of the same soil series described in the report of Crawford County, Kansas. This recent report gives results of pH determinations on some of the soils of this county, and every determination made showed the soil to be acid throughout the profile. Both these data and the map of the soil groups indicates that these lines are in soils which may be decidedly acid. Since well developed acid soils usually have moderately high resistivities, the very low resistivities observed by Weidner and Davis must be local areas not characteristic of the well developed soils of this region. Although these areas are the most corrosive, there are probably also corrosive acid soils as well along the lines examined. Since water was poured into the holes where the soil was dry, the possibility of obtaining high resistivities in soils containing considerable soluble material was eliminated.

There is considerable evidence to indicate that soils which are potentially corrosive are not always active. This is a possible, but rather weak explanation of why some low resistivity soils failed to corrode. Soils which have a resistivity of 500 ohm-cm. or less can safely be considered as potentially corrosive because they must contain some soluble salts. The return in increased pipe life from coating these places is so great that there is little question as to the advisability of coating them. Shepard has shown that resistivity measurements will locate these isolated "hot spots" along pipe lines in Oklahoma and northern Texas. If these small spots are the principal problem, and it is the opinion of many operators in the Mid-Continent that they are, then the problem is solved; any electrical soil test will locate these places. Such "hot spots" occur with less frequency along so-called "sulphur streams" and "mine seeps" in Pennsylvania. Here certainly they are abnormalities, in no way characteristic of the general soil or corrosion conditions.

Chemical Methods

The first serious attempt to use a corrosion survey for determining coating requirements was made by P. J. Richards and William Thompson Smith on the Amarillo-Denver line. An inspection of this line, after it had been in service for two years, indicated that the original recommendations appeared to be correct at about 75 per cent of the inspection points. This survey was based principally upon chemical analysis of the soil samples collected. Indications are that measurement of the resistivity of the soil samples and the use of a soil map to fix boundaries would give equally reliable results. The saving which was effected by this survey, which eliminated coating the line in noncorrosive soils, was about $200,000.

Chemical methods for determining soil corrosiveness, as developed largely by Dr. I. A. Denison at the Bureau of Standards, are simply methods for measuring the total amount of acid in the soil. Soil acidity determinations have not been used to any great extent by the oil or gas industry, possibly because these special methods are not known to most chemists. A report on the first attempt to correlate corrosiveness with total acidity along an operating line was given at the distribution conference two years ago. The work was carried out on some lines in Ohio by Denison supplementing earlier

work by Holler. Since then improved methods for determining total acidity have been worked out, and the results of measurements of the acidity of the soils in the Bureau of Standards soil corrosion test have been found to correspond rather closely to the corrosiveness of these soils, as is shown in Figure 5. Sandy soils apparently do not conform to this relation. The details of this method for testing the soil will be published in the Pipe Line Issue of The Oil and Gas Journal and will not be further discussed here.

Soil Survey Methods

It is an established fact that soils which look the same to a soil surveyor are actually the same, within limits, while soils which look differently are actually different in their physical and chemical properties. Soil maps have been made of about half of the agricultural land of the United States. Some southern states have been completely mapped. In these maps the soils have been classified into a large number of soil series. The series are distinguished and mapped by the soil surveyor on the basis of their appearance, a few analyses being made to check the field men in questionable cases. These soil maps, together with a report describing the soils which are located on the map, are usually issued for each county and they may be obtained from the Department of Agriculture or from the Government Printing Office as long as they are in print.

There is much that might be said about these soil maps and the system of soil classification that has been developed largely by making the maps. The places of burial in the Bureau of Standards soil corrosion investigation were chosen with the help of the Bureau of Soils, and considerable data have been accumulated by this time on how these soils corrode pipe. The soils in this investigation were chosen as being representative of large areas. Almost any soil series is closely related to some soil in this Bureau of Standards list, or it may have characteristics intermediate between two or more soils on the list.

Many men in the oil and gas industry are using these soil maps. Some who have tried them recommend their use more highly than others. Every distribution engineer should at least obtain a soil map covering a part of his area and see if he cannot recognize the principal soils on the map. In fact he is already familiar with them if he has observed many trenches in his district. If he learns that the pipe is corroded rapidly in one type of soil, he can expect pipe everywhere in that soil to be corroded at essentially this same rate. The gas man should not feel that these soil reports and maps are too involved for him to understand. They are purposely written so that the layman should be able to understand them. It would be a formidable task for the average person to become familiar with all of the soils in the country, so that he could recognize them in the field. But it would be a relatively simple matter for any distribution engineer to become familiar with the soils in his territory.

Some soil series are remarkably uniform in their properties and their corrosion rates, wherever they occur. Such soils are also uniform in their appearance. Other series include soils which vary considerably in both corrosiveness and appearance. The Cecil series, of which there is an area of about 25,000 square miles in Georgia and the Carolinas, is a good example of a uniform soil series. The following table gives the Bueau of Standards corrosion results on specimens buried two years ago in this soil.

Table 1—Average Rates of Corrosion and Pitting in the Cecil Series.

City and soil type—	Corrosion rate oz. per sq. ft. per year	Pitting rate mils per year
Atlanta, clay loam (buried 1922)	.73	25
Charlotte, clay	1 33	32
Macon, clay loam	1.91	31
Salisbury, clay loam	1 76	31
Raleigh, fine sandy loam	1.09	30
Atlanta, gravelly loam	1.68	29

Such laboratory tests as have been made on the above group of soils indicate that their physical and chemical properties fall within narrow limits. All of the types in this series have a red clay subsoil in which the specimens were placed.

All soils are not as uniform as the Cecil, either in corrosiveness or appearance. The different types of the Norfolk series show considerable variation in the appearance and properties of the subsoil. The corrosion results for the two-year specimens buried in four places in this soil are given in Table 2.

Table 2—Average Rates of Corrosion and Pitting in the Norfolk Series.

City and soil type—	Corrosion rate oz. per sq. ft. per year	Pitting rate mils per year
Jacksonville, sand (buried 1922)	.58	17.5
Macon, sandy loam	1 38	34
Pensacola, sand	42	8
Tampa, sand	.27	5

The Norfolk sand subsoil is fairly uniform both in corrosiveness and other properties, but the sandy loam is entirely different. There are but few soils which show such wide variation in subsoil characteristics as the Norfolk. In the case of such series, the type of the soil, as well as the series must be considered. This does not introduce any particular difficulty because the separate types of each series are always shown on the soil maps and if there is any appreciable difference in the various types of one series, the differences can be readily recognized in the field. The method of classifying and mapping soils is sufficiently elastic to take care of any differences in the corrosiveness of soils.

Use of Soil Survey Methods

The way to use soil survey methods in a corrosion survey is to recognize that there are three essential phases to it; which are: (1) Classify the soils along the line by some method, preferably by dividing them into recognized series if this is possible. Fix the boundaries of each "division" or "series" and consider it as a unit. (2) Decide upon the corrosiveness of the soils in each group. (3) Where coatings are necessary, choose coatings that will withstand soil action in soils where it is likely to be serious.

There is no particular difficulty in classifying the soils along a line. Soil maps will be helpful if they are available. A soil "division" or "series" should include all areas where the soil appears to be the same in its color, position, natural vegetation, drainage, and general appearance. The difficulty will be in keeping the divisions down to a reasonable number and at the same time being consistent.

The difficult part of the survey is to decide which of these divisions are corrosive and which are not. Electrical and chemical test of the soil, comparison with similar soils where the corrosiveness is known, and the good judgment of the surveyor should all enter into the decision. If the electrical tests show points of very low resistivity and the soil is in an arid region, the chances are that the entire division contains more or less alkali. The ideal noncorrosive soil has a high resistivity, no acidity, is coarse textured and well drained. The extent to which any soil is noncorrosive will depend on how nearly it approaches this ideal condition.

With regard to the last phase of the survey, the only soils which produce no soil stress are sands (which are usually noncorrosive) and continuously wet marshes and swamps. The intensity of the distorting tendency of a soil is roughly indicated by its clay content. The effect of dropping rocky backfill on the coating should also be considered.

This procedure probably seems too involved and expensive to interest the average pipe line operator. Actually, especially in places where the soils are uniform over large areas, the usual method of sampling the soil at regular intervals is unnecessary. And where the soils are more or less mixed, trying to fix boundaries by sampling is a hopeless procedure. Although this method has never been used extensively along pipe lines, it has been used by the Bureau of Soils in making all of their soil maps.

This paper will have served its purpose if it convinces the reader that soil survey methods should be an essential part of any corrosion survey. There are almost an infinite number of ways in which the value of this method of classification might be illustrated in other fields. Classification is an essential part of all scientific procedure. The acidity and resistivity measurement are much easier to interpret with a soil map.

Summary and Conclusions

We have shown that there is a rough relation between corrosiveness and resistivity for alkali soils, between acidity and corrosiveness for acid soils, and that some soil series are uniform in their properties and corrosiveness while others are not. The corrosiveness of the soil cannot be determined with any precision by any one of these methods. Similarly no other complex and partially understood phenomenon can be predicted with certainty. The weather forecaster misses his prediction a certain percentage of the time and many of us have reason to believe the physician is not always right in his diagnosis. Nevertheless, we do not condemn the barometer and the other devices of the meteorologist nor the numerous instruments of the physician. Some weather forecasters, with long experience in a particular locality, can predict the weather in that locality with a higher percentage of successes than the average. Some physicians are better than others, although the same instruments are available to all of them. No doubt the same situation exists among corrosion surveyors. Personal experience and judgment will probably always play an important part in corrosion surveys, but this does not mean that the instruments and methods are of no value or that we should not try to improve them.

BENEFICIAL RESULTS OBTAINED FROM USE OF TAPERED TUBING

By H. M. Staggs
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Early in 1929, following experiments made on gas-lift wells in the Seminole Field, Oklahoma, a string of tapered tubing was run in the Hendricks Pool, Winkler County, Texas, for the purpose of inducing natural flow. This well had ceased flowing through 7-inch casing. The tubing was of four sizes, ranging from 2½ to 4 inches. Natural flow of 12,000 bbls. of water per day with only a trace of oil started shortly after the tubing was landed. Flow continued practically undiminished for several weeks until the well was abandoned on account of no oil. The gas-water ratio was not over 15 feet per barrel. Shortly after this installation, a considerable number of wells in this field were similarly equipped and are still flowing. Due to high fluid levels, low gas-fluid ratios were obtained. Measurements on different wells showed gas factors as low as 15 feet per barrel through tapered tubing and 93 feet through straight tubing. One well in this field, which flowed by heads upon completion, pumped an average of 750 bbls. of fluid per day for 15 months. After this period, when equipped with tapered tubing, it flowed 2,800 bbls. daily and is flowing at the present.

About this time, development was started in Ward County, where the wells were small and gas insufficient for steady flow through 2-inch tubing and some wells refused to flow through 2-inch tubing and packer. Experiments with tubing smaller than 2 inches were started there. The first string was 1¼-inch, 1½-inch, 2-inch. Later, smaller strings were run and one well is equipped with tubing ⅜-inch, ½-inch, ¾-inch, 1-inch. The well would not flow with tubing one size larger. We were somewhat surprised when the well flowed at the rate of 15 bbls. per hour for three or four hours, until the head was flowed off. The gas-oil ratio was 200 feet per barrel. The well made 36 bbls. per day, plus 10 per cent water, initially and still does.

One well in this field ceased flowing almost two years ago through 2-inch tubing with packer and refused to flow during and after nine days of continuous swabbing. This well was pumped for a week and then equipped with a string of small flow tubing. There was no difference in production and the well would flow with more than 100 pounds per square inch back pressure on the surface.

At this time the reservoir pressure was 610 pounds per square inch, the depth to the pay approximately 2,450 feet. One bottom-hole flowing pressure determination was made in a well producing 40 bbls. per day through 1-inch, 1¼-inch, 1½-inch tubing and found to be 137 pounds per square inch. The gas-oil ratio was 700 feet per barrel. The well was then equipped with a smaller string which yielded the same oil output with somewhat less gas and was much more vigorous.

Recently a well 4,100 feet deep in Loving County was equipped with a two-stage string, one-half and three-fourths inch, and makes its production of 40-45 bbls. per day by pulsating flow.

From our experiments, it appears that in many cases natural flow can be maintained for long periods after what is known as the "pumping stage" has been reached. Also that the combination of small tubing set close to bottom usually results in reduced gas-oil ratios. The reduction we attribute to higher back pressures and the tubing almost touching bottom. The flow itself is facilitated by less difference in velocities between bottom and top and a high enough velocity at the bottom to prevent gas breaking through without excessive velocities at the top to increase friction losses. Paraffin deposits, which usually appear in the top 500 feet, may be reduced by carrying surface back pressure or removed by a hand-operated paraffin knife.

Conditions affecting natural flow are so variable that the adoption of a standard design of tapered tubing is not feasible. However, this should not discourage its use, since a string reasonably near the correct proportion will give good results. If this first string is not entirely too large, it will be found unnecessary to make frequent changes. When pumping wells are put to flowing, it may require from two to four weeks for the well to adapt itself to the new conditions.

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SCOUTS ON THE JOB

Group of scouts and oil operators at gas well completed by Frank Foster, Inc., in Sabine Parish, Louisiana. Left to right: Otis Winn, The Texas Company, Shreveport; C. L. Whitson, Shreveport; Earl Fox, Vacuum Oil Co.; H. B. Langford, Shreveport; Brantley Jackson, Magnolia Petroleum Co., and Norman Kinsey, Shreveport.

Pipe Line Welding As Seen From Standpoint Of User of Welding

Improvements Have Resulted in Closer Tolerances as to Many Factors

By R. S. Fuller
Engineer of distribution, Pacific Gas & Electric Co., San Francisco, Calif.*

While the title of this paper is Pipe Line Welding, the subject will be treated solely from the standpoint of a user of welding; in other words, by a pipeliner, who must consider all phases of the job and co-ordinate them for the best over-all results.

At the present time we find two major classifications of welding in use for joining wrought pipes in the field; the older one employing the oxy-acetylene flame, and the newer one employing the electric arc. These two classes are each in turn divided into two methods. In the case of oxy-acetylene, the original or ripple welding, in which a neutral flame is directed so as to preheat the metal of pipe ahead of the actual welding, has been partially replaced by the backhand method, using a carbonizing flame with an excess of acetylene which is directed toward the finished weld. When electric welding was first used on pipe lines the filler rod was bare and permitted of what now is considered comparatively low amperage; now we find most of the electric field welding done with flux coated rod at considerably higher amperage, which promises to go even higher as the art is developed.

Oxy-Acetylene Welding

Except for the development of high strength rods, which, because of their action during welding, gave slag protection to the weld and greater resulting strength in the weld, and improvements in quality of equipment, purity of the gases and uniformity and quality of the rod, oxy-acetylene welding by the ripple method is practically identical with that used when the first welding of wrought pipe was attempted. The pipe metal at the weld is heated to a high temperature so as to insure complete penetration to the bottom of the bevel, and to float out any impurities in the rod or pipe. Because of the high temperature care must be exercised to provide generous spacing between the ends of the pipe before starting welding in order that all spacing due to the expansion of the pipe metal be not lost as the welding progresses. Such loss of spacing renders complete penetration practically impossible and may result in locked up stresses sufficient, on cooling, to crack the weld. The speed attainable by this method of welding might average 1 to 2 inches of lineal weld per minute on pipe one quarter inch thick. Probably a vast majority of the mileage of gas welded pipe lines in service today were welded by the original ripple method and the history of their performance reflects credit on the value of gas welding.

During recent years the wider use of pipe of the larger diameters from 16 inches up by operators accustomed to welding their lines—the higher pressures to which these larger lines were to be subjected and the increase in value of continuous performance of such lines brought about a close study into the results which might be expected of gas welding. Undoubtedly the mere change to the larger diameters threw greater responsibility on the welding than had theretofore existed. Stresses resulting from the greater heat necessary to weld thicker walls and from the longer time such heat must be applied to complete a weld of the length due to increased size of mains left, under the older more or less loose procedure, stresses in the joint of more importance than ever before and in some cases serious enough to cause failure. More attention had to be given to the matter of spacing and welds if greater strength were called for. The item of careful adequate spacing was cared for by the operator while the manufacturer of welding equipment and supplies had to be looked to for greater strength in the weld. This he supplied by means of the high strength rod which was developed for the new conditions, and ripple welding reached its maximum with the general employment of high test rods and the proper technique for handling them. The reasons for the improvement in results as obtained by use of the high strength rod have been explained by those responsible for its introduction.

Suffice it to say, from the operators' standpoint, that this type of rod came at a time when just such an improvement was needed to continue welding as a feasible way of field joining wrought pipes and its introduction may be considered as a major step in the development of field welding.

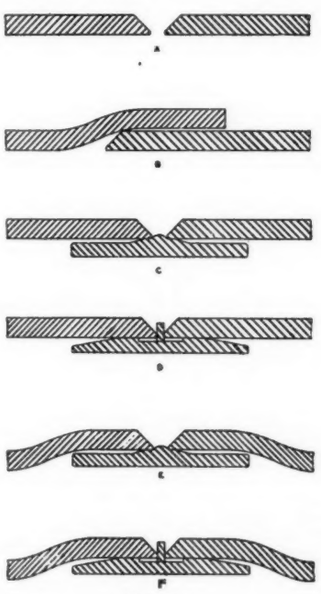

Figure 1.

Backhand Method

In the backhand method a carbonizing flame, obtained by an excess of acetylene, is used and the pipe is heated to a temperature somewhat lower than in the ripple method and, as the pipe metal will expand so much less, there is need for less spacing at the start. In backhand welding one who has been accustomed to using welding and also has come to realize the necessity for melting down the metal of the pipe in ripple welding to secure complete penetration sees what he must think a paradox. For if he watches through dark glasses the progress of a backhand weld he sees no such puddling as he has been accustomed to, but observes what appears to be a "solder job" such as he knew would never hold up in the old days. The sight of such a weld in the making together with the attendant speed obtained and the strength, durability and absence of leaks under test made it hard to believe there was not a "bug" in it somewhere—a bug big enough to destroy the whole thing. By this time it is probable that no such doubt exists for the evidence to the contrary has been so overwhelming as to convince the most skeptical that the method when used under proper procedure has all the merits claimed for it. Soon after the introduction of the backhand technique came the greatest improvement in torches which the art has witnessed. The semiautomatic torch has speeded up production so as to place the newer method far ahead of anything ever before attained in gas welding. The speed obtainable on pipe of approximately one-quarter inch thick is in the neighborhood of 3 to 5 inches of lineal weld per minute, the maximum speed having been obtained when using the semiautomatic torch.

Even now on work where the backhand method is used as standard, there will be found instances where the ripple weld should be preferred; these will be on pipe with torch cut ends which are to be welded. In these cases slag, resulting from the cut, will be included in the weld unless the flame is so manipulated as to float it out as the weld progresses, such manipulation can best be done with the neutral flame and high temperature used in the old method.

In the matter of dimensions of finished welds there are many ideas, some of which have undergone or are undergoing more or less radical changes. In many specifications for large welded pipe lines may be found clauses calling for a minimum width of from 1 inch to 1¼ inches with a build-up of from one-sixteenth to three-sixteenths inch above the outer surface of the pipe. These generous dimensions were probably predicated on the idea that, if a little is good a great deal must be better. Such is not necessarily the truth and, as a matter of fact, many of these large welds on examination and test, by means of coupons, show great weakness, probably due to the great amount of heat applied in order to deposit such an amount of metal. Tests on coupons cut from welds of only slight reinforcement above the surface of the pipe and of widths not exceeding one-half inch developed the full strength of the pipe material and almost invariably broke outside the weld. Any breaks occurring in the weld itself could be traced to inferior workmanship.

The backhand method of welding lends itself well to the making of small welds and the added speed obtained by this method is probably a combination of advantages in the method itself and the deposition of less metal.

Electric Welding

Until about three years ago pipe line welding by the electric arc process had employed bare rod electrodes and had been carried on at amperages of from 150 to 200; the speed on comparable thickness of pipe was little if any better than with the ripple method of welding; results were rather uncertain and it was felt that real improvement had to be made if competition with the gas method were to be successful. The transition was quickly made and soon electric welding on pipe line joints was being done with flux coated rod of greater diameter than before and at speeds theretofore unbelievable. The use of the flux coating permitted of higher amperages up to 600 and even beyond. By the use of the heavier rod deposition of the metal became so rapid that in the usual rolling weld two beads of metal could be placed to make a complete weld in somewhat less time than can be obtained with the use of backhand oxy-acetylene welding. In overhead or position welds the amperage, diameter of the rod and therefore the speed is reduced considerably and, due to the smaller rod, several courses or beads are deposited which should insure strong, tight welds. The introduction of the newer method of electric welding necessitated a new type of pipe joint employing a chill or backup ring in the case of a butt joint to confine the molten metal to its proper place.

Lines welded by this method on the Pacific Coast have proven eminently satisfactory and have inspired confidence in this way of constructing pipe lines.

Types of Joints

In Figure 1 will be found cuts of various joints in use on wrought pipes to be joined by welding.

"A" shows the plain butt alignment used from the first in oxy-acetylene welding and in some instances for the first bare rod electric welding. The total included angle has been 90 degrees for most work but for oxy-acetylene backhand welding better results are obtained when the total angle is about 70 degrees. The cut shows a considerable portion of the pipe wall not beveled and such should be the case for ripple welding; when the backhand procedure is followed better results will probably be obtained if the entire thickness of the pipe wall is beveled, for with the lower heats of this method there is no time for melting down the unbeveled portion and complete penetration may not result as would be the case with a complete bevel.

"B" is a bell and spigot joint, but little used for welding, and then confined, for the most part, to pipe imported from foreign countries. Tests on such joints often show weakness in the weld, such weakness being very pronounced when coupons cut from such joints are pulled. Stresses due to bending because of misalignment of parts making up coupons are bound to be detrimental to the weld. Were it possible to pull an entire joint of this type results would undoubtedly be much better than in the case of coupons only.

"C" is a double bell joint with a ridged chill or backup ring as used on practically all electric welding of large pipe lines. The ridge in center of chill ring is of proper dimensions to provide spacing between pipe ends.

"D" is the same as "C" except that the chill ring is grooved instead of ridged in order to adapt it to oxy-acetylene welding. At various points around the circumference the chill ring is punched to provide spurs for spacing the ends, these spurs being melted down during welding.

"E" and "F" are identical with "C" and "D" respectively except that these joints are in plain end pipe instead of double bell. It has not been definitely determined how serious a loss in capacity of a pipe line would result from the restriction in diameter at each joint as would result from this design, nor has the cost of making a bell on each end of the pipe been finally determined so that the extra cost of the double bell might be weighed against the possible loss in capacity with chill ring in plain end pipe. Total included angle of the beveled ends when chill rings are used for backhand gas welding should be 70 degrees and for electric welding 90 degrees.

Backhand Tests

Due to the rapid development in both the electric and oxy-acetylene methods of welding, and in order to determine if possible the strength of welds made by the backhand gas process which at the time was somewhat of an unknown quantity, whereas electric welding has been used on several hundred miles of line with attendant tests, during the spring

*Before Ninth Annual Distribution Conference, American Gas Association, Birmingham, Ala.

of 1931 many tests were made on welds made by backhand gas welding.

In these tests 22-inch O.D. by five-sixteenths-inch electrically welded pipe was used, sections approximately 10 feet in length being closed at both ends by welding the usual orange peel heads after the pipe had been slit from end to end 180 degrees from the factory electric weld. The slits were welded up by the backhand method with backup strips in some cases and without in others. The orange peel heads would not withstand more than 1,800 pounds per square inch which was not enough to cause any rupture of the vessels, or bombs as they were called, so they were replaced with dished heads five-sixteenths of an inch in thickness welded on by the backhand method. The bombs were then subjected to hydraulic pressure to destruction. Except in one instance the vessel failed along and adjacent to the gas weld at pressures from 1,875 to 1,915 pounds per square inch or at stresses of from 66,000 to 67,000 pounds per square inch respectively. The exception was a break along and adjacent to the manufacturer's weld at an internal pressure of 2,015 pounds per square inch.

One such vessel of 22-inch pipe about 5½ feet long was welded in the same manner, using the electric weld with flux coated rod and backup strip. Failure occurred as in the case of the gas welded bombs, at and along the weld, at a pressure of 1,935 pounds per square inch or 68,000 pounds per square inch stress.

Several vessels were welded up of the same pipe in lengths of from 4 to 6 feet including in each case a double bell weld with chill ring situated approximately midway of the length. Some of these girth welds were backhand gas and some were electric with flux coated rod. Distortion of the vessels caused slight checks in electric girth weld at 1,875 pounds per square inch and in gas weld at 1,915 pounds per square inch pressure.

It was found early in the series of tests that high pressure couplings which had been welded in the sides of the vessels for the introduction of water were weak spots and it was necessary to replace them with extra heavy nipples which gave no trouble.

At the conclusion of the tests on the bombs two dished heads which had been used in several of the tests, were welded together with no pipe between in the form of a flat ball. The weld was backhand gas, with no chill ring, not more than a half-inch wide, as were all of the gas girth welds, and at 3,750 pounds per square inch pressure the ball burst in the parent metal away from the girth weld but skirting the weld made for inserting the extra heavy nipple.

Lining Up for Welding

Two radically different procedures for lining up pipe for welding have been followed ever since the inception of field welding by any method. One is to line up the pipe and to weld ahead of the ditch, the other is to line up and weld on skids directly over the ditch so that the pipe has only to be lowered to the ditch bottom with no lateral movement necessary. The first method requires that the pipe be lined up far enough away from the ditch to prevent interference with the ditching work. In the event the line is to be one composed of one, two or three welds and then a coupling similar to the Dayton or Dresser the moving of the pipe to its place over the ditch may be handled rather easily, particularly if the pipe has no protective coating which must be guarded from injury. By lining up ahead of the ditch the matter of skids is simplified, for with no ditch to span they need be little but short pieces or blocks where dollies are used. Where dollies are not used the skid length will be greatly influenced by the outside circumference of the pipe for the skid must be long enough to allow at least one complete revolution of the pipe for rolling welds. When the diameter of the pipe being welded is more than 16 inches the space required to permit rolling the pipe for welding without dollies is a major factor to be considered when plannnig the work.

The use of dollies to permit the rolling of the pipe without a change in its location is becoming more and more important, particularly with the larger sizes, where maximum speed and economy are desired, for the speed attainable by the welding crews will, in a large measure, be influenced by the methods of lining up the pipe in preparation for the welders. It is beyond argument that the job will benefit by the greatest number of rolling welds possible as compared to position or overhead welds. This calls for long strings of pipe to be made up into one length before tying into adjacent lengths and unless pipe dollies are used the power required to turn long lengths of large pipe will be costly and, in order to have sufficient strength to stand rolling in long strings the tack welds must be of great strength. Experience shows that where long strings of large pipe are rolled on skids a residual twist may be left in individual strings which can give trouble later on. Where dollies are used they should have roller or ball bearings to reduce friction to the minimum and they must be strongly made to withstand the rough handling they are sure to receive through long use. Their number should be kept to a minimum for they must be transported the entire length of the job as the work progresses. In order to keep the number down light weight equipment, easily handled and moved along the line by two men, has been devised so that they may be removed from under each string as soon as it is finished.

Keeping Torches Busy

With the higher attainable welding speeds it becomes increasingly important to keep the torches, whether electric or gas, busy at all times and operating under the best possible conditions. When pipe strings are turned or rolled by the requisite number of men using chain tongs the torches work under what might be termed ideal conditions only part of the time, for it is usually the case that when several men heaving on long chain tongs are signalled to turn the pipe a few inches they either go too far or not far enough; with the result that the welder must make a portion of his weld for each turn under other than the best conditions. The use of a mechanical turning device operated by one man so as to turn the pipe constantly at the proper rate of speed has resulted in reducing the welding time on 26-inch pipe more than 25 per cent. The use of pipe in the longest possible lengths which can be supplied by the manufacturer will of course reduce the number of field welds and in turn reduce the number of skids and dollies necessary, both of which must be transported along the line.

With all pipe lines from 12-inch diameter up the operation of aligning and tacking assumes increased importance and unless proper methods are used may slow up the entire job. From time to time, various designs of clamps for use in holding the pipe ends together for tacking have been brought out and tried with varying degrees of success. In this writer's opinion they are of but little value for even the best of them allow at least enough play in the pipe ends to result in misalignment of pipe only approximately one-quarter inch thick. The ideal design for rapid accurate aligning seems to be a joint similar to "C," "D," "E," or "F" in Figure 1, where a chill or backup ring of sufficient strength to retain its shape is introduced into the end of one of the pipes and the other placed over it. The procedure followed out on one job of nearly 200 miles of 22, 24 and 26-inch of double bell end pipe with chill ring as in "F" was to place the first length of pipe over the ditch with a skid and dolly near each end, insert a chill ring in one end, place one end of the next pipe over the head or outboard end well above the horizontal plane, torch weld for 1½ to 2-inch and lower the far end on to a skid and dolly. By stabbing in this manner it was easy to get the pipe home for the top tack, and lowering the pipe, put it into proper position for spacing all around. As the lineup crane proceeded to the next length the pipe would be rotated 180° and another tack made by the tack welder who was able to make the second tack and walk to the next length without holding up the crane. By towing the tack welder's outfit behind the lineup crane the transportation was simplified. On this job the pipe was furnished in lengths uniform to one-quarter inch which enable the lining up to grade of skid far in advance of the lineup crew and resulted in lining up as much as 8,000 feet of 26-inch in a nine-hour day.

During this operation the importance of truly round ends cut accurately square with the length of the pipe manifested itself. It was found that with round ends the chill ring could be easily inserted in one end by hand with no hammering necessary and that the ring would remain in place. If the ends were square, a straight line could be made without wide spacing over part of the joint.

Tack welds should be made with sufficient speed to enable the lineup men to keep well ahead of the "firing line" or rolling welders or the size of the firing line must be reduced. When tack welding by oxy-acetylene much time is consumed in heating the pipe before the tack weld may be started; this heating time is required at each tack even though several may be made at one joint. The total time required to make three or four tacks on pipe of approximately one-quarter-inch thickness will result in a considerable amount of time lost from actual production by the lineup crew each day. It has been demonstrated that electric tacking may be used with good results on lines to be gas welded provided the same welding rod is used for tacking as is used on the line. It was also found that fewer tacks were required when backup rings instead of clamps are used.

Expansion Joints

Due probably to the milder temperatures on the Pacific Coast there has been felt no need for expansion joints for protection against breakage in the line. Many corrugated joints designed for expansion have been used in order to make angles in the pipe lines, both horizontal and vertical. When valves or other specials such as cast fittings and drips are installed, couplings of the Dayton or Dresser type have been used near to such specials to protect them from damage due to movement of the line from expansion or contraction or from any torsional stress which might be left in the line as laid. In order to guard against contraction stresses in long welded lines of a diameter too great to be "snaked" in the ditch, the lines are lowered into the ditch so as to leave "slack wallops" resting on skids aboveground which are lowered either during the night or early morning when the pipe is at a low temperature. Tie-in welds are also made at such times and enough backfill is placed over the pipe to protect it from the rays of the sun so that it will pick up no heat after being lowered into the ditch. When lines laid under such conditions have been cut for the installation of valve and specials after backfilling the line, in no case has there been a separation at the cut to indicate contraction. The practice of installing all valves and specials after backfilling the lines has been generally followed.

Angles

It is practically never possible to lay pipe lines of any considerable length without including in the lines either pipe bends, fittings or other specials to provide for changes in direction both horizontal and vertical. The necessity for such provision becomes increasingly important in laying the larger diameters where there is practically no flexibility in the pipe itself. There will be found at least four procedures in vogue for this as follows: Pipe bends, corrugated expansion joints, miter welds and the newest method employing "factory bends." All of these, excepting the second, have the common fault of being just as inflexible as the pipe itself and, of course, any angles made should fit the trench exactly after laying and backfilling. Pipe bends, made at the ditch side, have been used extensively in the Middle West but practically not at all on the Pacific Coast. They are laborous to make and when made are likely to be a compromise as far as obtaining the proper angle is concerned. Corrugated expansion joints, if not subjected to angles so great as to deform them are ideal as to providing deflection required. They should be lined up straight and welded with a length of pipe beyond the angle joint; after both welds, one at each end of the corrugated portion, are made, the outboard length of pipe may be swung into position and the line may then be built ahead. Miter welds have probably been in wide use ever since the introduction of welded lines and are still in general use, though it has been felt by some engineers that this sort of angle is a source of weakness in lines of large diameter. It is doubtful if this has been proven to be true where good workmanship prevails; they have the advantage of being easily made with the equipment on the job so that the angle called for will result. Whether or not it will fit the ditch depends on the measurement of the angle as in all instances where inflexible specials are used. The "factory bend" is not a bend at all but a short piece of pipe, about 3 feet long with each end mitered one-half the total angle desired. The ends are formed into bells and correction is made in the forming for the ellipse which results from mitering. Necessarily they do not come in all degrees of deflection but are made to supply what may be considered the deflection most often to be encountered as 10°, 20°, 30°, etc., therefore, it follows that, in order to obtain the proper deflection there must be further angularity

TEN CONCLUSIONS REACHED ON PIPE COATINGS AND CORROSION

The report of the distribution subcommittee on pipe coatings and corrosion, presented at the ninth annual distribution conference of the American Gas Association in Birmingham, Ala., by the chairman of the committee, J. K. Crowell of the S. R. Dresser Manufacturing Co., said in part:

"From a consideration of all the data on the subject which is at this time available, it is apparent that we are justified in making the following statements:

"That the only practical means of reaching a satisfactory solution of the problem of the protection of underground piping from corrosion is painstaking and necessarily slow research by those who are in a position to give their entire time to the work.

"That the protective value of a coating depends primarily upon the nature of the coating and to a minor extent, upon the soil.

"That when a coating fails, the pitting rate depends upon the soil.

"That the electrical conductance and pinhole tests are useful methods for determining the protective value of coatings.

"That the protective value of a coating is increased by increasing the thickness, within certain limits.

"That mechanical distortion after application is the principal cause of bituminous coating failures.

"That organic reinforcing materials are decomposed by bacteria and fungi in the soil and that the extent of this decomposition or rotting, depends upon the nature of the soil and upon the extent to which the materials are protected with bitumens or disinfectants.

"That thin, or what might be termed paint coatings do not add enough to the life of the pipe to justify their use.

"That corrosiveness of a soil cannot as yet be accurately predetermined by the use of any one method.

"That the corrosiveness of a soil can be fairly accurately predetermined by the use of a combination of methods."

in the joint between the pipe and the factory bend either to increase or decrease the final deflection. Another item to be considered is that the angle in the pipe line cannot always be made at the end of a pipe length, particularly when using lengths of from 40 to 60 feet. If double bell pipe with bell end factory bends are used this results in bell and spigot joints at many of the angles. Such a joint is not looked on with general favor.

Testing

In general, gas lines on the Pacific Coast are tested under air at about 100 pounds with soap and water on top of ditch end with recording pressure gauge in lengths of a mile or more after backfilling, by this procedure any leaks are found and repaired before the line is completed and no time is lost after completion in making such test. Testing in this manner requires that more ditch be kept open than would be the case were testing to be deferred to the completion of the job. Whether or not the costs would differ is problematical. With the welding proving to be so nearly free from leaks consideration is being given to the elimination of the soapsud test above-ground in the interest of keeping the jobs closer knit and speeding up the back end.

In order to test the welds for strength and durability, on some jobs coupons were cut across the joint approximately 1½ inches wide and 8 inches long, these were tested by bending against the weld by placing in a vise and striking with a sledge or in a press, or by a portable tensile testing machine. Coupons on a 20-inch line were cut in a circular shape 5 or 6 inches in diameter and were later cut into strips for testing. It was felt that the circular coupons could be more easily replaced as there would be less concentration of heat such as in welding both sides of the narrow strip coupons; changing the shape of the coupons did not eliminate the trouble experienced from checking in the coupon itself or cracks in the weld and dishing of the coupons was resorted to in the effort to solve the trouble, it was felt that the dishing would relieve any strains produced in replacing the coupon and remove the possibility of cracks or checking. This has not proven to be the case, however, for even after two years service there have been small cracks in the coupons or weld attaching them to the pipe. Apparently where it is felt that tests comparable to coupon tests must be made to determine the quality of the welds it will be best to cut entire welds from the line at intervals and make various tests on strips cut from such welds. The welders will probably be kept up to a satisfactory standard if they know that welds are being cut out at random and their work may be tested at any time.

Attempts have been made to devise practical accurate nondestructive testing of welds, among those being by the X-Ray and by the stethoscope, the former is probably out of the question for pipe line welding, but the latter seems to have good possibilities. Experiments on a small scale indicate that it is possible to train testers so they will be able to differentiate between good and poor welding and in some instances to name the fault, whether the weld is burned, not completely penetrated or with included cold shuts. Tests of nondestructive sort which could be made on each joint and be depended on for accuracy would be of great benefit to the work and would be productive of increased speed and therefore lower costs.

It should be recognized from the foregoing that there is a great deal more to successful pipe line welding than the mere operation of welding and that the success of pipe line welding is influenced by many factors which many might consider foreign to the subject. With the improvement in welding, both gas and electric, have resulted closer tolerances as to factors such as right of way methods of lining up, testing and so on, so that all phases of the job should be considered in the light of the welding method to be used if the best of results are to be expected.

Testing Pipe Line Coatings in Place

Electrical Drainage Provided to Protect Mains from Electrolysis. Sharp Reduction in Failures Reported to Have Resulted

By R. J. Kuhn
Electrolysis engineer, New Orleans Public Service, Inc.*

In New Orleans, La., the high pressure gas lines which range in size from 3 to 20 inches are welded throughout except for an occasional valve and a few expansion joints. The long stretches of continuous metal are very susceptible to stray current electrolysis, to rapid galvanic action in connection with other structures, and to soil corrosion.

The mains were substantially coated with two layers of 15-pound per square asbestos felt spirally wound on the pipe by machine after dipping in hot asphalt. A final layer of Kraft paper was applied to facilitate handling. Previous to coating, the pipe had been thoroughly cleaned in a W-K-M machine and painted with asphalt primer paint. The welded joints were coated with three layers of 15-pound felt and asphalt with the third layer overlapping the seams.

In order to protect the mains from electrolysis, electrical drainage was provided. Drainage consists of bonding the mains through one or more metallic connections, such as a copper cable, to the proper return circuits of an electric railway system.

Electrical drainage, if of sufficient intensity, will not only correct electrolysis conditions, but will overcome galvanic corrosion conditions caused by contact of the steel main with dissimilar metallic structures, and it is also believed, will prevent ordinary soil corrosion. The coating was designed to prevent soil corrosion but as coatings are usually more or less imperfect there remained parts of the pipe surface unprotected.

Application of Electrical Drainage

The steel gas mains were installed three years ago and sufficient time has not elapsed to gain knowledge of the behavior of drainage on this system. It may be then of interest to know the results of electrical drainage on other structures in New Orleans. Electrical drainage has beneficially affected the water system as evidenced by the sharp reduction in failures after the installation of this form of protection about eight years ago.

The failures of the lead water services in the period from 1914 to 1921, attributable to electrolysis, averaged 81 per year. In 1922 electrolysis mitigative measures were started resulting in a sharp reduction in failures for that year. The reduction continued year after year until 1929 when the failures were reduced to zero. Since 1929 no failures of lead water services have occurred due to electrolysis. These results clearly indicate the practicability of electrical drainage in overcoming, at least, corrosive conditions due to stray current.

Electrical Drainage of Coated Gas Mains

As asphalts and asbestos are nonconductors of electricity, the electricity which gets on the gas line must enter through imperfections in the coating. The soil is an electrolytic conductor of electricity due to the presence of moisture and dissociated acids, bases or salts. Some of the soil and moisture penetrates the imperfections in the coating and causes the pipe surface to become in electrolytic contact with the soils.

It is recognized by investigators that the electrical resistance of a coating depends partly upon the amount of imperfections in a coating and upon the moisture penetration. Imperfections may be inherent to the coating in the form of small air pockets and pin holes or they may be caused by conditions of handling and backfilling. Imperfections may also develop due to movement of the pipe, movement of the soil or to hard objects in the soil such as bottles, bricks, shells, etc., coming in contact with the coatings.

*Before A.G.A. Distribution Conference, Birmingham, Ala.

Electricity enters the main via scars or imperfections from the surrounding earth. It is evident that the greater the amount of exposed surface, the lesser will be the electrical resistance of the coating and greater qualities of electricity will collect on the pipe for a given difference of potential between the pipe and the surrounding soil.

It is essential, therefore, to know the performance of the electrical resistance of the coating of a pipe line in order to properly regulate the potentials to overcome electrolysis, galvanic action and soil corrosion.

Electrical Resistance of Coatings

In general, three methods have been used to measure the electrical resistance of coatings. First, laboratory tests on small areas of either coated nipples or other metallic forms; second, field tests on small areas of exposed coatings on live lines; and third, tests on buried nipples by means of an attached wire.

No tests had been made on sections of line as far as known under regular working conditions. Since the method of extending the unit values obtained by experimental tests on small areas to the relatively large areas of pipe lines did not seem practicable, it was decided to insulate a considerable length of a working line in such a way that the resistance could be measured without disturbing the line in the least.

Accordingly a 2,500-foot section of 12-inch coated welded steel line was provided with flange type insulating joints at each end and a large size wire welded to the pipe at the time of construction. This wire was brought to the surface for testing purposes.

The resistance of the coating was measured by impressing a voltage on the line from a storage battery and measuring the current involved and the corresponding rise in potential of the section.

Results of Tests of Electrical Resistance

Construction work was started on the line under test on April 28, 1930, and completed on May 15, 1930. The initial tests were made on May 25, 1930, and the results gave a resistance of 3.26 ohms for the coating on the 2,500 feet of 12-inch diameter steel pipe. This amounted to a unit resistance of 27,710 ohms per square foot, equivalent to a conductance of 36.1 micromhos per square foot.

This high value did not persist for any length of time for three months later on August 11, 1930, the total resistance had diminished to 0.37 ohms, equivalent to 3,145 ohms per square foot or 318 micromhos per square foot. This resistance value was approximately one-tenth the initial value.

Two months later, on September 30, 1930, the total resistance dropped again, this time by a smaller decrement to 0.234 ohms. This value was equivalent to 1,989 ohms per square foot, or 503 micromhos per square foot.

On May 16, 1931, the resistance had dropped again but this time very slightly. The values were 0.179 ohms total resistance, 1,521 ohms per square foot, or 657 micromhos per square foot.

On July 28, 1931, and still later on January 28, 1932, the same values were again observed indicating the resistance had reached a stable value.

Physical examination of the same coating on other lines under similar soil conditions shows the coating to be in excellent shape except for an occasional scar. No corrosion has ever been found where the coating covered the pipe. Pits were found at scars where the potentials were not properly regulated but were not present where the potential of the main was lowered sufficiently.

It should be borne in mind that any conclusions drawn here are for conditions as exist in New Orleans. Whether or not the same methods may be applied to other sections will depend upon the existing conditions, and the judgment of those in charge.

Has Eliminated Failures

From the results of investigation in New Orleans, we can conclude that electrical drainage has eliminated failures on lead water service pipes whereas, several years ago an average of 81 of such failures were occurring per year.

Similar favorable electrolysis results are obtainable on iron and steel structures but the failure records do not indicate the conditions on these systems as clearly as the failures indicate conditions on the lead service pipes.

From the studies of corrosion on iron and steel structures it is believed electrical drainage will not only prevent electrolysis but will also prevent galvanic action and possibly soil corrosion.

Obstacles to the application of drainage to large gas lines was the proper distribution of current and the large amounts required on a bare line. With coated lines, it is necessary only to provide current for the imperfections in the coating, which as a rule cover but a small percentage of the total area of the pipe. In New Orleans, therefore, the coating is preventing corrosion on the spots properly covered and electrical drainage is preventing corrosion on the bare spots.

The criteria of a good coating as far as New Orleans conditions are concerned and assuming the coating itself is noncorrosive are its values of resistance per square foot measured on extensive sections and its ability to maintain this resistance.

The coating resistance tests made on the insulated section of 12-inch coated welded steel line previously described indicate the original resistance values were very high. Several months later, however, the values dropped to about one-tenth the original value while today and for several months past the resistance has stood steady at 1,521 ohms per square foot, or 657 micromhos per square foot. This latter value while only one-twentieth of the original amount is a very good unit value and is most probably a good average for a line.

These values of resistance are of such magnitude as to permit the economical application of electrical drainage to coated welded steel gas lines to overcome the last portion of corrosive action not taken care of by the coating.

Where street railway currents are not available for this purpose in New Orleans, battery charging rectifiers are used to generate electricity for the protection of the steel mains.

In New Orleans, with its wet soil and multitudinous electrolysis problems, the drainage of the steel mains introduced many new and varied problems which required very vigilant technical attention. In order not to do more harm than good, it is recommended that protection of this sort be attempted only under the supervision of some one highly familiar with the intricate details of electrolysis drainage.

TURNER VALLEY PROJECT

CHATHAM, Ontario, Apr. 16.—Development of a clay products industry which would utilize extensive quantities of Turner Valley waste gas is foreshadowed in a report by W. G. Worcester of the University of Saskatchewan. Investigations by Professor Worcester indicate extensive deposits of clay suitable for the production of paving brick, roofing tile, terra cotta and similar products not now manufactured in Alberta.

New Welding Blowpipe Has Been Developed for Oxyacetylene Welding

Produces Welds at Increased Speed and With Proportional Reduction in Cost

By T. W. Greene
Development engineer, Linde Air Products Co., New York*

With the remarkable expansion in the gas industry, in which natural gas is being transported hundreds of miles and in which allied operating companies are being interconnected by transmission lines, engineering construction has necessitated greater pressures, higher strength pipe material and larger diameters. To meet these engineering requirements, the necessity of securing high strength, reliable, leakproof joints has assumed decided importance. The welded joint has met these increasing requirements. Dating from the first welding of 11 miles of low pressure gas line by the Philadelphia & Suburban Gas Co. some 20 years ago, and particularly from the laying of the first 100-mile high pressure (700-pound operating) oil line by the Prairie Pipe Line Co. in 1921, oxyacetylene welding for joining pipe has paralleled both in development and extent of application the phenomenal expansion in the transmission and distribution of gas. Today, no one is interested in precedence of application. Welding is accepted. Many operating companies have practically their entire piping system fabricated by oxyacetylene welding, and all are using it to some extent. It may be conservatively estimated that today there are at least 35,000 to 50,000 miles of oxyacetylene welded main transmission lines, varying in size from 4 to 26 inches in diameter, in the gas and petroleum industry alone.

Likewise, there is no concern as to the advantages of welded construction. These are known. Interest today centers in: What are the characteristics and maximum quality of the weld? how can full strength joints be produced and assured? and what are the new developments in the art to obtain maximum economy and efficiency.

New Developments

Probably in no other field of industrial activity today is greater progress being made than in welding. In the last year or so some outstanding, almost revolutionary, developments in the field of welding have accomplished remarkable results in assurance of weld quality and economy in making oxyacetylene welded joints. This report, in compliance with the request and purpose of the Pipe Joints Committee for correlating data and facts, to which it is the privilege of the Linde Air Products Co. to contribute, will attempt to cover these developments in detail and outline procedures to obtain maximum joint quality and secure greater economy in application.

As a result of scientific research and laboratory investigation, a new process or method of oxyacetylene welding, decidedly distinct in many features from previous procedures, has been evolved for manual application and accompanying this, a new welding blowpipe has been developed and perfected, which, for certain types of joints in horizontal welding, produces welds at a rate or speed of welding from 3 to 3½ times faster than was previously obtainable by the oxyacetylene method and with nearly a proportional reduction in cost. This new method (for which patents are pending) is known as the Linde-weld process. It is a practical and successful application of metallurgical knowledge and skill to oxyacetylene welding, which results in production of superior welds at a greatly increased speed. Its application in over 3,000 miles of welded overland pipe line construction throughout the country, ranging in size from 4 to 26 inches, has produced outstanding results in speed of construction, economy and efficiency of welds.

High strength welds at high speed with this welding method are achieved by three interdependent, interrelated features: A special flame adjustment, the use of special welding rod, and a new welding technique.

Special Flame Adjustment

The welding is done with a carbonizing flame. By virtue of certain metallurgical features of the properly adjusted flame, the weld metal is fused with the base metal through the medium of a low melting point, high carbon, iron alloy.

The flame should be adjusted so that the excess acetylene will at all times preclude the possibility of the flame becoming oxidizing; in other words, a reducing flame. The "feather," an index of the excess acetylene, should be adjusted so as not to exceed twice the length of the inner cone when measured from the end of the welding tip. This properly adjusted reducing flame has a tendency to carbonize the surface to be welded, reduces its melting point, assures intimate fusion with the added metal and produces a high, but more normal carbon content in the weld than can be secured by a neutral flame. With the recommended technique any added carbon is diffused throughout the joint, giving a homogeneous weld having very desirable properties of high strength and marked ductility.

Special Welding Rod

A new welding rod with suitable metallurgical characteristics to produce fusion with the lower melting high carbon iron alloy surface, has been developed especially for this application.

Welding Technique

The welding technique recommended is in general what is known as backhand welding, in which the flame is pointed backward against the weld. The flame and rod are manipulated more or less parallel to the line of welding. The flame is alternately played upon the base metal to prepare it for fusion and on the rod for accelerated deposition of weld metal. Only little breakdown or melting of the base metal is required with the correct procedure. As a much smaller spacing can be used, due to the decrease in the contraction of the weld, an economy is effected in the amount of rod, welding gases and time required for welding. Also from the inherent advantage of the technique and welding procedures, the angle of bevel can be reduced, which effects further economies.

Semiautomatic Welding

In addition to the adaptability of the Lindeweld process to the present type of hand blowpipe, the process has been made almost automatic by the development of a special blowpipe for use with this welding method. With the use of this new blowpipe, which is called the Lindeweld (patent applied for), it is possible to obtain welding speeds, it is believed, equal to, or greater than those obtained with any other process.

As the welding rod is automatically fed by gravity in this blowpipe, it is used for rotated joints, where welding can be done at the top quadrant of the pipe. The greatest advantages are obtained in welding the larger sizes, 14 inches in diameter and above, where the ratio of actual welding time to moving and lost motion time, is high. Since normally 75 to 85 per cent of all joints in a large project can be made by rotating the pipe, this new blowpipe represents a most important development in welding because of its marked economy and other advantages.

Description

The new blowpipe is a two-flame blowpipe with an automatic gravity feed rod holder. A carriage having runners supports the apparatus during the welding operation. In its present form the two flames and the rod holder are aligned in the same plane, which is also the plane of the pipe joint. The lower flame, is the welding flame, which is used for preparing the base metal for proper fusion with the weld metal and for actually melting the end of the welding rod into the welding puddle. The upper flame is smaller and is used for preheating the welding rod. This preheating flame is arranged so that the inner cone impinges directly upon the rod, which is preheated to a bright cherry red, and thus little additional heat from the welding flame is required to melt it into the welding puddle. The welding operation is carried on by the backhand method so that the completed weld is on the opposite side of the rod from the welding flame.

Development of this almost automatic blowpipe has been important in increasing efficiency and lowering costs in pipe welding. The position of the operator during the welding is such that he may work with a minimum of fatigue and a maximum of comfort. In welding the joint the operator stands or sits at the side of the pipe facing the joint. This position is possible for all pipe sizes and also for horizontal tank welding. Since only one hand is required to hold the blowpipe, the operator is free to make any necessary adjustments to the flame, change the rod, signal the turner, or if he wishes, shift the blowpipe to the other hand, without any interruption to the welding operation. Another advantage in the position assumed by the operator is that, as the welding progresses toward him, he can see both sides and the bottom of the vee at all times so as to control the quality of the weld.

All adjustments necessary for the operation of the blowpipe may be made by the operator's right hand. A lifting device controlled by a trigger on the blowpipe handle permits the operator to raise or lower the welding rod as required in starting, passing over tackwelds, changing rod and in finishing. The possible travel of the lifter is about 2½ inches, giving the operator perfect control of the rod, which is free to feed into the weld when the lifter trigger is forward, and is gripped by the device when the lifter trigger is pulled back.

Manipulation

The manipulation or technique required with this blowpipe is very simple; in fact, it is almost automatic. The welding is always under the instant control of the operator. Practically the only manipulation required is a slight raising or lowering of the handle. By lowering the handle the main welding flame is brought to impinge more directly on the base metal in order to prepare it more quickly for fusion; by raising the handle the welding flame impinges more directly on the rod, accelerating rod deposition when desired, thus producing a controllable and efficient balance between preparation and welding rod deposition.

Welding Speed

As an indication of the speed of welding that has been attained in field application, production or number of rotated welds per welder per day on some lines has been increased three to four times over that secured on similar size lines following former procedures for pipe line construction. The time for making 20-inch pipe joints, five-sixteenths-inch wall, on one large line where the new blowpipes have been used with the Lindeweld process, varied from 14 to 19 minutes, with an approximate average of 16 to 17 minutes per weld. The rate of welding attainable with this blowpipe is so fast that production is dependent primarily on efficiency of organization and personnel. On a 26-inch gas line a maximum production per welder of 25 joints has been obtained in a 9-hour day.

Developments

Transportation of natural gas over great distances with economy has necessitated the use of extremely high pressures, which, in turn, has required high strength pipe. The more universal use of protective coatings has likewise led to users saving on steel, relying upon the protective coatings to resist corrosion. It is not an unusual practice to construct lines of 20-inch diameter or even larger with a wall thickness of one-quarter-inch, because a saving of only one-thirty-second inch means millions of dollars in large projects. These practices have called for higher and higher strength materials. Pipe has been considered and in some cases has been used having a carbon content ranging from 0.30 to 0.40 per cent with an actual ultimate strength between 80,000 and 100,000 pounds per square inch.

It is of interest to note that accompanying the use of high strength materials for pipe, there has proceeded development of welding rods suitable for making satisfactory welds. By the use of high test, high quality welding rods, in accordance with procedure control, welds are regularly obtained which develop full strength of the pipe.

A few years ago, pipe in use was almost universally lapwelded; being comparatively low in carbon, and having a strength of about 45,000 to 55,000 pounds per square inch. In recent years, fusion or resistance welded pipe and seamless pipe have come into extensive use. Although lower strength seamless pipe of Grade A, A.P.I. pipe line specification is extensively used, fusion welded and seamless pipe, corresponding to Grade B, are more general for the large diameter long lines. The carbon content for the latter ranges from 0.20 to 0.35 per cent with a minimum of 62,000 to 65,000 pounds per square inch tensile strength, but usually developing between 70,000 and 80,000 pounds per square inch. Pipe having carbon content higher than 0.35 per cent has been tried, and can be successfully welded, but several construction problems, such as bending complicate its use, and the industry's needs today do not apparently demand this grade.

Pipe of all grades, irrespective of manufacture, can be successfully welded by the oxyacetylene process. Proper welding rods, with more attention to procedure and greater care in welding, are necessarily required with increased strength. It can be appreciated that factors will vary in welding a 45,000-pound strength material, as compared with an 80,000-pound strength pipe. Through proper procedure, however, all commercially used steel pipe has been satisfactorily welded.

*Presented at Distribution Conference, American Gas Association, Birmingham, Ala.

THERMAL EXPANSION OF COMMON LIQUEFIED GASES

(Continued from Page 34)

bear a close relationship to the actual percentage composition.

Vapor pressures of all products were determined with the liquefied petroleum gas vapor pressure bomb. The features of this apparatus are such as to eliminate the commonest sources of error in vapor pressure tests and for this reason the results obtained through its use have been found to be very dependable. The apparatus itself consists of a heavy bomb of approximately 1,000 cc. capacity. Two eduction pipes with which the bomb is fitted terminate at the bottom of the bomb and are equipped with small needle valves permanently attached. An accurate pressure gauge, also permanently attached, completes the equipment. In testing, one of the valves is connected to the source of supply by means of flexible tubing and the bomb is then partially filled with the sample while being held in an inverted position. The supply valve is closed and the contents are allowed to boil off through the other eduction pipe, while the bomb is still in the inverted position, this operation serving to purge the bomb of air. The residual liquid remaining is disposed of by returning the apparatus to its normal upright position when the liquid will be exhausted through the open eduction pipe. This valve is then closed, the supply valve is reopened and the bomb is allowed to fill completely, after which the supply valve is closed and the apparatus is disconnected. One-tenth of the volumetric contents of the bomb is removed in a measuring graduate while the bomb is in an upright position, the pressure existing on the bomb being sufficient to force the liquid out. The bomb is then placed in an ordinary water bath where pressure readings are taken for a series of temperatures.

The liquid specific gravities of the hydrocarbon samples were determined by means of a bomb of similar construction, the method consisting of weighing accurately on a torsion balance a known volume of liquid.

In as much as a complete tabulation of the results for all of the individual tests would prove to be rather lengthy, the results for butane alone will be given and the results of the other tests will be presented in a more condensed and usable form. The test results for commercially pure normal butane are presented in Table 1.

Since in the case of relatively simple mixtures a close interrelationship has been shown to exist between composition and all of the physical properties the summarized results of the investigation have been compiled in tabular form to show the relationship between the various average properties. Table 2 contains this information and, as will be noted, the data covers the entire range of possible liquefied petroleum gas products as now marketed.

TABLE 2—SUMMARY OF PHYSICAL PROPERTIES AND LOADING DENSITY DATA OF COMMERCIAL LIQUEFIED PETROLEUM GAS PRODUCTS

Approximate gravity at 60°F. Specific	°A.P.I.	Initial boiling point °F.	Vapor pressure in lbs./sq. in. gauge at 70°F.	105°F.	130°F.	Determined maximum allowable loading density for max. temperatures of 105°F.	130°F.	Present I.C.C. loading density regulations for temperatures of 105°F.	130°F.
.500	151.5	—51	126	217	302	45.90%	43.08%	45.5%	41.0%
.502	150.5	—49	123	213	296	46.10	43 37	45 5	41.0
.504	149.5	—48	120	209	291	46.35	43 63	45 5	42 0
.506	148 0	—46	118	205	285	46 58	43.88	46.0	42 0
.508	147.0	—45	115	201	279	46.82	44 12	46 0	42.0
.510	146.0	—43	113	196	273	47.05	44.40	46 5	42.0
.512	145.0	—42	110	192	268	47.27	44.70	47.0	43 0
.514	144.0	—40	108	188	262	47.50	44.95	47.0	43.0
.516	143.0	—38	105	184	256	47.72	45.20	47.5	43.0
.518	142.0	—37	103	180	251	47.97	45.50	47.5	43.0
.520	140.5	—35	100	176	245	48.20	45 75	48.0	44.0
.522	139.5	—34	98	171	240	48.43	46 00	48 0	44.0
.524	138.5	—32	95	167	234	48.67	46.27	48.5	44.0
.526	137.5	—31	92	163	228	48.90	46.50	48 5	44.0
.528	136.5	—29	90	159	223	49.13	46.75	49.0	45 0
.530	135.5	—28	87	155	217	49.37	47.00	49.0	45 0
.532	134.5	—26	85	150	212	49.60	47.27	49 5	45.0
.534	133.5	—24	82	146	206	49 82	47.53	49 5	45.0
.536	132.5	—22	79	142	201	50.05	47.78	50.0	45 0
.538	131.5	—21	77	137	195	50.30	48.02	50 0	46.0
.540	130.5	—19	74	133	189	50.52	48.30	50 0	46 0
.542	129.5	—17	72	129	183	50.74	48.53	50.5	46.0
.544	128.5	—15	69	124	178	50.97	48.80	50.5	46.0
.546	127.5	—13	67	120	172	51.20	49.05	51.0	47.0
.548	126.5	—12	64	116	167	51.42	49.30	51.0	47.0
.550	126.0	—10	62	112	161	51.65	49.55	51.5	47.0
.552	125.0	—8	59	107	155	51.88	49.80	51.5	47.0
.554	124.0	—6	56	103	150	52.10	50.03	52.0	48 0
.556	123.0	—4	54	99	144	52.33	50.27	52 0	48.0
.558	122.0	—2	51	95	139	52.55	50.52	52 5	48.0
.560	121.0	0	49	91	133	52.80	50.75	52.5	48.0
.562	120.5	2	46	87	128	53.02	50.90	53 0	49.0
.564	119.5	4	44	82	122	53.23	51.24	53 0	49.0
.566	118.5	7	41	78	116	53.47	51.49	53.0	49.0
.568	117.5	9	38	74	111	53.70	51.72	53.5	49.0
.570	116.5	11	36	69	105	53.91	51.95	53.5	50.0
.572	116.0	13	33	65	100	54.13	52.19	54.0	50 0
.574	115.0	15	31	61	94	54.35	52.42	54.0	50.0
.576	114.0	17	28	56	88	54.57	52.65	54.5	50.0
.578	113.5	19	26	52	83	54.80	52.88	54.5	51.0
.580	112.5	22	23	48	77	55.00	53.10	54 5	51.0
.582	111.5	24	20	44	72	55.21	53.34	55.0	51.0
.584	111.0	26	18	39	67	55.41	53.55	55.0	51.0
.586	110.0	29	17	37	64	55.62	53.75	55.5	52.0
.588	109.0	31	15	36	62	55.84	54 00	55.5	52.0
.590	108.5	33	14	34	60	56.08	54.25	56.0	52.0
.592	107.5	35	13	32	57	56.30	54 50	56 0	52.0
.594	107.0	38	12	31	55	56.51	54.75	56.5	53.0
.596	106.0	40	11	29	53	56.71	55.05	56.5	53.0
.598	105.0	42	9	27	50	56.93	55.19	56 5	53.0
.600	104.0	45	8	26	48	57.13	55.38	57.0	53.0

ETHYL WILL ESTABLISH ADVERTISING RECORD

(Continued from Page 32)

posters or billboards. As a result we believe that we can truthfully say the campaign will be one of the largest which has ever featured a single product.

"As we pointed out in our original letter, the aim of the campaign is not the winning of Ethyl business by one licensee from another (although it goes without saying that individual customers will benefit in proportion to their participation) but instead we are hopeful of making the public more conscious of the broad distribution of Ethyl Gasoline, its improvement in quality, and its leadership in the gasoline field. With this in mind we trust that our licensees will wait until the start of the campaign before displaying any advertising material either on the campaign itself or on the improvement in the Ethyl standard, thus obtaining the cumulative effect of massed Ethyl advertising during the intensive sales period.

Efforts at Point of Sale

"Although the participation of our licensees in the physical part of the campaign has exceeded our expectations, a great deal can be done by sales departments in stimulating the Ethyl business at the point of sale. Such time-tried plans as 'Ethyl sales contests', prizes on percentage increases of Ethyl business, giving of additional commissions to attendants during the period, all will have their effect in increasing the Ethyl business. Furthermore, having the attendants welcome each gasoline purchaser by standing at the Ethyl pump and asking 'have you tried our improved Ethyl?' will also be productive of results.

"Reports from Detroit indicate that the automotive industry is becoming more and more interested in high compression, several manufacturers, who were not doing so at the beginning of the year, now stressing optional or special high-compression heads. With our campaign coming at the start of the motoring season and at a time when the automobile industry is in the midst of a tremendous sales campaign having for its object the sale of new cars, we have every hope that a close tie-up between the two industries will result in a substantial increase in profitable premium gasoline sales."

CALIFORNIA CRUDE OIL PRICES

STANDARD OIL CO. OF CALIFORNIA

For its current purchases of crude oil at the well (unless otherwise specified) for allowable crude oil produced in accordance with allocations made by the California Statewide Curtailment Committee. All gravities above those quoted take highest price offered in that field. Effective June 19, 1931 at 7 a.m.

Gravity	Signal Hill	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Olinda-Brea, Canon	Torrance	Richfield	Coyote Hills	Santa Fe Springs	Midway-Sunset, Elk Hills, Buena Vista Hills	Lost Hills
14-14.9	$.65	$.65	$.65	$.65	$.65	$.65	$.65	$.65	....	$.55	$.55
15-15.9	.65	.65	.65	.65	.65	.65	.65	.65	....	.55	.55
16-16.9	.65	.65	.65	.65	.65	.65	.65	.65	....	.55	.55
17-17.9	.65	.65	.65	.65	.65	.65	.65	.65	....	.55	.55
18-18.9	.65	.65	.65	.65	.65	.65	.65	.65	....	.55	.55
19-19.9	.65	.65	.65	.65	.65	.65	.65	.65	....	.55	.55
20-20.9	.65	.65	.65	.66	.66	.65	.65	.65	....	.55	.55
21-21.9	.65	.65	.65	.68	.67	.65	.66	.65	....	.55	.57
22-22.9	.65	.65	.66	.70	.68	.66	.68	.65	....	.56	.59
23-23.9	.67	.67	.68	.72	.70	.67	.70	.66	....	.58	.60
24-24.9	.69	.69	.70	.74	.72	.68	.72	.67	$.65	.61	.62
25-25.9	.71	.71	.72	.76	.74	.70	.74	.69	.65	.64	.64
26-26.9	.73	.73	.74	....	.76	....	....	.71	.65	.66	.65
27-27.9	.75	.75	.76	....	.78	....	....	.73	.68	.68	.67
28-28.9	.77	....	....	....	.80	....	....	.75	.71	.71	.69
29-29.9	.79	....	....	....	....	....	....	.77	.73	.74	.71
30-30.9	.81	....	....	....	....	....	....	.79	.75	.76	.72
31-31.9	....	....	....	....	....	....	....	....	.78	....	....
32-32.9	....	....	....	....	....	....	....	....	.80	....	....
33-33.9	....	....	....	....	....	....	....	....	.83	....	....
34-34.9	....	....	....	....	....	....	....	....	.85	....	....
35-35.9	....	....	....	....	....	....	....	....	.87	....	....

Standard Oil Co. of California prices in other fields:

Wheeler Ridge—65 cents per barrel for all grades (14° to 25.9°).

Coalinga—55 cents for all grades from 14° to 24-24.9°; 57 cents for 25 gravity.

Newhall, McKittrick and Kern River—55 cents for all grades (14° to 19.9°).

Montebello—65 cents for all grades (14° to 25.9°).

Whittier and LaHabra—65 cents for all grades (14° to 22.9°).

Elwood Terrace, f.o.b. ship—33° to 33.9°, 79 cents; 34° to 34.9°, 81 cents; 35° to 35.9°, 84 cents; 36° and above, 87 cents.

Playa Del Rey—Prices subject to field gathering charge of 5 cents per barrel—19° to 19.9°, 65 cents; 20° to 20.9°, 65 cents; 21° to 21.9°, 66 cents; 22° to 22.9°, 67 cents; 23° to 23.9°, 68 cents; 24° to 24.9°, 67 cents; 25° and above, 68 cents.

ASSOCIATED OIL CO. PRICES

Associated Oil Co. prices effective June 20 are as follows:

Ventura Avenue—22 gravity, 58 cents, with 2 cents added for each degree upward to and including 30 gravity, which is 74 cents.

Kettleman Hills—The Associated Oil Co., effective at 7 a.m. February 5, 1932, withdrew and canceled any and all prices heretofore published and in effect for Kettleman Hills oil.

Potrero—24 gravity, 69 cents, with 2 cents added for each degree upward to 34 gravity which is 69 cents.

General Petroleum Co. in Kettleman Hills, effective January 1, 1932: 32-32.9°, 66 cents; 34-34.9°, 68 cents; 35-35.9°, 70 cents; 36-36.9°, 72 cents; 37-37.9°, 74 cents; 38-38.9° 76 cents; 39-39.9°, 78 cents.

UNION OIL CO. OF CALIFORNIA

Crude Oil Prices for Its Purchases at the Well for Crude Produced in Strict Accordance With the Production Allocation Made by the California Statewide Curtailment Committee Effective 7 a.m., June 20, 1931

(All gravities above these quoted take highest price for that field)

Gravity °A.P.I.	Signal Hill	Alamitos Heights, Seal Beach	Huntington Beach Athens, Rosecrans,	Domingues	Torrance	Santa Fe Springs	Playa Del Rey* E. Coyote	Richfield	Montebello	Santa Paula	Orcutt	Coalinga	Lost Hills	McKittrick, Kern River, Sunset-Midway, Elk Hills, Buena Vista Hills	Gravity °A.P.I.
11-13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	$.50	11-13.9
14-14.9	$.65	$.65	$.65	....	$.65	....	....	$.65	$.65	$.65	$.55	$.55	$.55	.55	14-14.9
15-15.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	15-15.9
16-16.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	16-16.9
17-17.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	17-17.9
18-18.9	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	18-18.9
19-19.9	.65	.65	.65	....	.65	....	$.65	.65	.65	.65	.55	.55	.55	.55	19-19.9
20-20.9	.65	.65	.65	....	.65	....	.65	.65	.65	.65	.56	.55	.55	.55	20-20.9
21-21.9	.65	.65	.65	....	.65	....	.66	.66	.65	.65	.57	.55	.57	.55	21-21.9
22-22.9	.65	.65	.65	....	.66	....	.67	.67	.65	.65	.59	.55	.59	.56	22-22.9
23-23.9	.67	.67	.67	....	.67	....	.68	.68	.65	.65	.61	.55	.60	.58	23-23.9
24-24.9	.69	.69	.69	$.69	.68	$.65	.69	.69	.65	.66	.63	.55	.62	.61	24-24.9
25-25.9	.71	.71	.71	.71	.70	.65	.70	.70	.65	.68	.65	.57	.64	.64	25-25.9
26-26.9	.73	.73	.73	.73	....	.65	....	.72	....	.70	.67	....	.66	.66	26-26.9
27-27.9	.75	.75	.75	.75	....	.68	....	.74	....	.72	....	....	.67	.68	27-27.9
28-28.9	.77	....	....	.77	....	.71	....	....	....	.74	....	....	.69	.71	28-28.9
29-29.9	.79	....	....	.79	....	.73	....	....	....	.76	....	....	.71	.74	29-29.9
30-30.9	.81	....	....	.81	....	.75	....	....	....	.78	....	....	.72	.76	30-30.9
31-31.9	....	....	....	.83	....	.78	....	....	....	....	....	....	....	....	31-31.9
32-32.9	....	....	....	.85	....	.80	....	....	....	....	....	....	....	....	32-32.9
33-33.9	....	....	....	.87	....	.83	....	....	....	....	....	....	....	....	33-33.9
34-34.9	....	....	....	.89	....	.85	....	....	....	....	....	....	....	....	34-34.9

*Subject to a gathering charge of 5 cents per barrel.

East Texas Locations Spurt Upward

Movement to Cut Production to 62 Bbls. per Well Under Way. Now 5,000 Completions With 30 Unconnected Wells in District

By L. E. Bredberg

DALLAS, Tex., Apr. 18.—Drilling activities in East Texas have increased almost three-fold, the number of locations for the past week having climbed to 172, or only 23 less than the peak during last summer's wild drilling before the field was shut in by Governor Sterling. Fifty-five of the new locations were staked in northern Gregg and 51 in southern Gregg County, the remainder being scattered in Upshur, Smith, Rusk and Cherokee Counties. Cherokee County was added to the producing list last week when Merry Brothers and Perrini drilled in an extension well.

A movement is now under way for cutting production in the field from the 67-bbl. per well daily allowable set by the Railroad Commission to 62 bbls., the East Texas Refining Co. and Magnolia Petroleum Co., both producers and purchasers in the field, leading with this voluntary curtailment, curtailing their own production and likewise their purchases from wells to which they are connected. This voluntary curtailment was announced Saturday, taking effect at 7 a.m., April 18. The Humble Oil & Refining Co. has announced that it also would make such a move at 7 a.m., April 19. The Stanolind Oil & Gas Co., Tidal Refining Co., and The Texas Company have signified that they too would curtail their own production, and their purchases in the field. Word is expected from other purchasers that they will soon follow in establishing this new curtailment of 5 bbls. per well.

Companies which have curtailed purchases and their own production are connected with the following number of outside and controlled wells: Magnolia Petroleum Co., outside wells connected, 347; their own, or controlled wells, 217. The Humble is connected to 560 outside wells, and has 482 controlled connections. Stanolind Oil & Gas Co. is connected to 183 outside and 125 controlled wells, but these are figured in the Humble Oil & Refining Co. number, as that company handles the oil for the Stanolind Oil & Gas Co., transporting it to Mexia where the latter company takes it over for its own lines running north and south out of that junction. The East Texas Refining Co. is connected to 128 wells, including its own and outside wells. The Texas Company order affects only 42 outside and 62 controlled wells, although the Texas-Empire Pipe Line Co. is connected to 294 outside and 23 controlled wells. Whether the latter are included in the order issued by The Texas Company is not known at this writing. If not, they no doubt will be affected by a later order issued by that company. The Tidal Refining Co. is connected to 182 outside and 68 controlled wells, the majority being owned by the company's affiliated company, the Tidal Oil Co.

F. W. Burford's Statement

F. W. Burford, president of the East Texas Refining Co., announced the company's order through letters to the lease and royalty owners affected by the new move. Part of the letter reads as follows:

"The increased drilling and number of completions in East Texas on properties with which we are connected increase our receipts of oil beyond our refinery requirements. This situation obliges us to decrease our takings, as it is not advisable to continue storing oil at present prices, as we have been for the last three weeks. Effective at 7 a.m., Monday, April 18, we will run 62 bbls. per well from the wells we are connected with, including our own properties in East Texas." Mr. Burford also cited the recent large increases shown in crude oil imports from foreign countries into the United States as having affected the market for East Texas crude.

A meeting was held in Dallas on April 16 by a group of independent operators, at which time the East Texas Field and its allowable was discussed, and after the meeting a wire was sent to Chairman C. V. Terrell of the Railroad Commission asking relief in the matter of allowable, stating that with the present number of wells, and an allowable of 67 bbls. per well, the daily total allowable of the field of 325,000 bbls. could not be retained due to the increase in number of wells each day.

A meeting has been called by the commission for April 28, to discuss the allowable for East Texas, but an emergency order is expected to be issued before that time, cutting back per well allowable so as to maintain the field allowable around 325,000 bbls. per day.

It is generally felt that the price structure will be weakened to the breaking point if drilling activities continue at the present rate, unless the per well allowable is continuously cut back to hold down the district's daily average to around 325,000 bbls. However, an increase in daily allowable may be asked at the Railroad Commission's hearing on April 28, which would check the curtailment of the per well allowable to a certain degree. Such an increase might be granted on the basis of increased consumption of refined products at this time of year.

Oil to Storage

Oil went to storage in East Texas for the week ending April 13, the first time in several weeks, daily average distribution having been considerably heavier than production during those weeks. Last week there was a change in conditions. Production for that period was 343,485 bbls. per day, while distribution was only 314,635 bbls. per day, a drop of around 40,300 bbls., making daily average runs to storage in the neighborhood of 28,850 bbls.

There are approximately 30 unconnected wells in the district, and as more wells are completed daily, throwing an increasing burden upon the pipe line companies and purchasers, it is needless to say there no doubt will be many more wells standing shut in waiting for connections within the next few weeks. The total number of completed wells in the field has now reached the 5,000 mark.

Production for the 24 hours ending at 7 a. m., April 15, was 337,623 bbls. while pipe line runs for the same period totaled 410,257 bbls., or a different condition than appeared for the week ending April 13 when production outdistanced distribution, consequently it is difficult to draw any conclusions as to conditions in the field in regard to distribution and production unless they are considered over a period of several weeks.

J. Earl Brown and others' No. 1 Arnold in the William Christian Survey, approximately 1 mile south of the nearest producing gas well in southern Rusk County is the most interesting test in the district at the present time, with but a short distance to drill. It topped the Austin chalk at 3,570 feet and is now drilling at 3,590 feet in this formation. Surface elevation of the test is 387 feet, making top of the chalk minus 3,183 feet.

Still more trouble has been encountered with overproduction of wells in the field, two more wells having been shut in this week, and guards posted around them to prevent their being opened until the overage is made up. The owner of these wells has an injunction restraining the troops from interfering with producing of his leases, so civilian guards were stationed at the wells by the Railroad Commission. When crude was selling for 10 cents per barrel royalty owners and leaseowners did not pay much attention to wells which might have been producing above the daily allowable, and when no strict accounting of runs was made, but now that the crude is worth almost 10 times that amount they are desirous of getting every barrel due them, or its equivalent in oil payments.

The military force was again reduced this week. The Railroad Commission has assumed additional duties in handling the field, thereby taking over some of the functions which have been performed by the troops. Col. L. S. Davidson remains in charge, with Maj. H. H. Johnson second in command.

Daily average oil shipments from East Texas, week ending April 11:

Company, size and location—	Amt.
Arkansas P. L. Co., 8-in., Shreveport	9,260
Atlantic P. L. Co., 10-in., Atreco	18,195
Atlas P. L. Co., 8-in., Shreveport	none
Gulf P. L. Co., 2 and 8-in., Oklahoma	19,109
Gulf P. L. Co., 2 and 8-in., Port Arthur	14,109
Humble P. L. Co., 2 and 10-in., Shreveport	29,187
Humble P. L. Co., 2 and 8-in., Todd	31,531
Liberty P. L. Co., 8-in., Rusk	1,961
Magnolia P. L. Co., 10-in., Center	25,302
Magnolia P. L. Co., 12-in., Corsicana	19,437
Shell P. L. Corp., 10-in., Houston	24,639
Sinclair-Prairie Pipe Line Co., 12-in., Teague	19,766
Sun-Yount Lee P. L. Co., 10-in. Sun City	34,888
Texas P. L. Co., 10-in., Douglass	20,663
Texas Empire P. L. Co., 12-in., Port Arthur	28,086
Tidal Ref. Co., 6-in., Carthage	3,170
Total	299,303

SHIPMENTS TO REFINERIES

Arrow Ref. Co., Overton	S.D.
Beacon Ref. Co., Henderson	910
Boone Ref. Co., Arp	625
Central Ref. Co., Friars Switch	S.D.
Constantin Ref. Co., Overton	S.D.
Diamond Ref. Co., Overton	371
East Texas Ref. Co., Longview	7,867
East Texas Ref. Co., Friars Switch	S.D.
Gladetex Ref. Co., Gladewater	571
Gladewater Ref. Co., Gladewater	450
Guillory Ref. Co., Kilgore	250
Kilgore Ref. Co., Kilgore	550
Overton Ref. Co., Overton	792
Petroleum Refractionating Co., Longview	S.D.
Sinclair Ref. Co., Longview	846
Slack Ref. Co., Camps Switch	S.D.
Southern Oil Ref. Co., Reeds Switch	275
Taylor Ref. Co., Tyler	402
V. O. E. Ref. Co., Gladewater	S.D.
Total	13,909

SHIPMENTS BY TANK CAR

Tyler P. L. Co. from Tyler	488
Cherokee Chief from Gladewater	953
Total	1,441
Total daily average distribution	314,653
Total daily average production	343,414
Daily average to storage	28,761

Rusk County

Gant and others' No. 1 Till in the M. V. Pena Survey, on the eastern side of the Joiner area, southern Rusk County, apparently has the bottom of the hole near the Georgetown, after having cored to 3,658½ feet. The test topped the Pecan Gap chalk at 2,606 feet, base at 3,026 feet, and the top of the Austin chalk at 3,411 feet. Chalk and shale and sand was cored from 3,546-56 feet, and 9 feet of fine hard dry white sand was cored to 3,578 feet. Present appearance of the test is not favorable, and it will probably prove an east edge marker for this area.

Mullins and Strickland's No. 1 Brewer, around 8,000 feet south of the above test, in Rusk County, is also appearing as an east edge marker for the field. On a drill stem test from 3,597-3,669 feet, it tests only six fourbles of mud. Another test was made from 3,530-3,669 feet, this test also appearing unfavorable. Elevation of the test is 354 feet. Elevation of Gant and others' No. 1 Till is 358 feet.

The Joe Marr Drilling Co. is drilling an interesting test on the Lacy farm in the J. H. Sparks Survey, southern Rusk County, in the northwest corner of the north 50 acres of the southwest 100 acres of the survey, approximately 7,500 feet west of the Brown No. 1 Arnold test now drilling, and 5,800 feet southwest of the Stanolind Oil & Gas Co.'s No. 1 Lacy gasser.

Cherokee County

Oliver and others are drilling in the northwest corner of the Stone 50 acres in the De Los Santos Coy Survey, Cherokee County, and Doctor Tubbs and others are drilling on the east edge of this tract, two interesting tests for the southwest corner of the Joiner area. They are both west of the Merry Brothers and Perrini extension which came in last week opening Cherokee County to production.

The Sinclair-Prairie Oil Co. has contracted with the Sun Oil Co. to sell that company gas from its No. 1 Ashby in the William Clark Survey, southern Rusk County, the Sun company to use the gas for drilling and operating purposes on leases to the north. About 5,000,000 feet of gas per day is being piped from this well for development purposes. The gas is reported to be selling for 10 cents per 1,000 feet.

Smith County

Lucas and Hobbs' No. 1 Sartain in the James Jordan Survey, Smith County, made 60 per cent salt water while swabbing at 3,807 feet, and is now plugging back to 3,796 feet and preparing to test. It is south of a producer which was formerly abandoned, then plugged back for a small producer. Sinclair-Prairie Oil Co.'s No. 1 Moore, in the same survey, also is plugging back in an effort to make a producer of it. These wells are on the extreme west edge of the field, and may be expected to make small oil producers if any.

Upshur County

Pat Hudson's No. 1 Smith in the John Denson Survey, north of the Cranfill-Reynolds outpost producer in Upshur County, was abandoned this week at 3,710 feet. It topped sand at 3,663 feet this week, showing water. McFarland Oil Co.'s No. 1 Willie Starr in the Cooper Survey, to the east of the Cranfill-Reynolds well, remains shut down at 3,523 feet.

Rains County

Greer and others' No. 1 Roy Harper, interesting wildcat in the David Rose Survey, eastern part of Rains County, encountered water sand at 4,380-4,402 feet and will be abandoned. Elevation of the test is 439 feet, making sub-sea datum on top of water sand a minus 3,541 feet. This has been one of the most closely watched wildcats in the district due to its favorable looking geological location.

J. W. Barton has turned his 8,500-acre block about 2½ miles south of Maydell in southwestern Cherokee County to D. A. LaSalle of Ada, Okla., who will drill a test on the block.

Saturn Oil Co. completed its No. 1 W. F. Smith the past week for a dry hole. It is in the northwest part of the field in the Jose M. Pineda Survey, southern Upshur County, and defines the production limits of the field in this direction. It topped the sand at 3,688 feet, and was abandoned at a total depth of 3,716 feet.

The Great Eastern Oil Co. will drill a test on a 6,000-acre block lying in the

J. C. Dunne, William Steele, W. N. Coleman, D. Rouse, M. Edwards and S. Estrage Surveys in Harrison County. This acreage is approximately 1 mile northeast of the town of Jonesville.

Falls County

The second shallow well has been completed in the newly discovered area in Falls County, near the McLennan County line, being Hodges' No. 1 Marr, and total depth reported at 972 feet. The well was estimated making 50 bbls. per day, but is now shut in for storage. It is approximately 1 mile south of the Dixie Oil Syndicate's No. 2 Davis which was completed in February, for a small producer at a total depth of 1,002 feet. Several other tests have been drilled in this area since the discovery, none, however, proving successful.

There were four tests abandoned in Nacogdoches County during the week. This county has been having one of the most extensive wildcat plays of any of the East Texas counties, and plugging of these tests checks off considerable acreage to producing possibilities.

Acme Oil Co. abandoned its No. 1 Horton in the Isaac Casey Survey, Smith County, this week, at a total depth of 4,047 feet. Elevation is 449 feet.

Van Field

The Pure Oil Co. abandoned another test in this field during the week, No. 1 R. Clark in the Philip Mason Survey, located on the extreme western side of the field. Total depth is 3,018 feet.

Seven locations were staked during the week by the Pure Oil Co., which operates for the five affiliated companies under the unit plan. One of the seven locations, however, is in the Carroll district, which is the producing area outside of the unitized block.

COMPLETIONS IN EAST TEXAS

Week Ending April 16

Cherokee County

Merry Brothers and Perini's No. 1 Annie Kelly, top sand 3,677 feet, initial production 32 bbls. in 10 minutes through 1-inch tubing choke through 2-inch tubing, total depth 3,679 feet.

North Gregg County

Abernathy and Kirkpatrick's No. 1-C R. M. Woods, top sand 3,619 feet, initial production 71 bbls. per day through various chokes, total depth 3,627 feet. Amerada Petroleum Corp.'s No. 4 Hearne, top sand 3,525 feet, initial production 111 bbls. per hour through tubing, total depth 3,539 feet. Arkansas Fuel Oil Co.'s No. 4-A P. D. Harrison, top sand 3,575 feet, initial production 42 bbls. in 15 minutes through open tubing, total depth 3,580 feet; No. 2-B Lathrop, top sand 3,597 feet, initial production 37 bbls. in 15 minutes through 1-inch tubing choke, total depth 3,619 feet. Atlantic Oil & Production Co.'s No. 7 W. P. Duncan, top sand 3,584 feet, initial production 35 bbls. per hour through tapered tubing, total depth 3,633 feet; No. 5 Wilson, top sand 3,554 feet, initial production 22 bbls. per hour through tapered tubing, total depth 3,592 feet; No. 4 M. Hays, top sand 3,504 feet, initial production 22 bbls. per hour through tapered tubing, total depth 3,569 feet.

Barnsdall and Houston Oil Co.'s No. 11 McGrede, top sand 3,625 feet, initial production 125 bbls. per hour through 1-inch tubing choke, total depth 3,666 feet. Blacknight Oil Co.'s No. 1 J. G. McGrede, top sand 3,652 feet, initial production 45 bbls. in 15 minutes through 1½-inch tubing choke, total depth 3,675 feet. Chaplin and Bass' No. 2 C. C. Clemmons, top sand 3,596 feet, initial production 25 bbls. in 10 minutes through open tubing, total depth 3,609 feet. Cherokee Chief Oil Co.'s No. 3 D. Johnson, top sand 3,650 feet, initial production 31 bbls. in 15 minutes through 1-inch tubing choke, total depth 3,678 feet.

Darby Petroleum Co.'s No. 4 C. C. Clemmons, top sand 3,570 feet, initial production 71 bbls. per day through various chokes, total depth 3,640 feet. Devonian Oil Co.'s No. 4 L. C. Ingram, top sand 3,494 feet, initial production 140 bbls. per hour through three-fourths inch tubing choke, total depth 3,533 feet. East Texas Refining Co.'s No. 1 J. W. Fuller, top sand 3,610 feet, initial production 13 bbls. in 15 minutes through open tubing, total depth 3,636 feet. Empire Gas & Fuel Oil Co.'s No. 3 A. Green, top sand 3,580 feet, initial production 82 bbls. in 15 minutes through open tubing, total depth 3,645 feet; No. 5 L. A. Jeter, top sand 3,585 feet, initial production 48 bbls. in 15 minutes through open tubing, total depth 3,622 feet.

Fain and McGaha's No. 3 A. Tooke, top sand 3,633 feet, initial production 100 bbls. per hour thorugh 1-inch tubing choke, total depth 3,676 feet. F. H. E. Oil Co.'s No. 8 B. C. Christian, top sand 3,668 feet, initial production 60 bbls. in 30 minutes through 1-inch tubing choke, total depth 3,695 feet; No. 2 M. Christian, top sand 3,608 feet, initial production 71 bbls. per day through various chokes, total depth 3,638 feet. Meridian Oil Co.'s No. 2 W. H. York, top sand 3,498 feet, initial production 71 bbls. per day through various chokes, total depth 3,589 feet. Gulf Production Co.'s No. 3 Barker, top sand 3,576 feet, initial production 100 bbls. per hour through tubing, total depth 3,588 feet.

Humble Oil & Refining Co.'s No. 6 Armstrong, top sand 3,553 feet, initial production 15 bbls. in 15 minutes through three-fourths inch tubing choke, total depth 3,563 feet; No. 6 J. F. Boles, top sand 3,598 feet, initial production 103 bbls. per hour through three-fourths inch tubing choke, total depth 3,643 feet; No. 3 C. C. Clemmons, top sand 3,601 feet, initial production 22 bbls. per hour through three-fourths inch tubing choke, total depth 3,631 feet. King and Massingill's No. 3 E. Anderson, top sand 3,613 feet, initial production 71 bbls. per day through various chokes, total depth 3,643 feet.

Lucey Petroleum Co.'s No. 1 B. C. Christian, top sand 3,599 feet, initial production 71 bbls. per day through various chokes, total depth 3,634 feet; No. 5 McBee Fisher, top sand 3,486 feet, initial production 40 bbls. in one-half hour through three-fourths-inch tubing choke, total depth 3,521 feet. Magnolia Petroleum Co.'s No. 2 H. Key, top sand 3,536 feet, initial production 231 bbls. per hour through open tubing, total depth 3,562 feet; No. 1 Zeigler, top sand 3,465 feet, initial production 232 bbls. per hour through open tubing, total depth 3,498 feet. Jim McMurray and others' No. 1 J. H. Alexander, top sand 3,577 feet, initial production 30 bbls. in one-half hour through open tubing, total depth 3,597 feet. Pilot Oil Co.'s No. 1 F. Smith, top sand 3,563 feet, initial production 40 bbls. in one-half hour through 1-inch tubing choke, total depth 3,590 feet. Powell and Irion's No. 1 T. P. Railroad, top sand 3,615 feet, initial production 45 bbls. in one-fourth hour through 1-inch tubing choke, total depth 3,638 feet.

Shano Oil Co.'s No. 2 J. T. Hopkins, top sand 3,505 feet, initial production 35 bbls. in 20 minutes through 1-inch tubing choke, total depth 3,575 feet. Smith and Dorough Oil Co.'s No. 3 Clements, top sand 3,620 feet, initial production 60 bbls. per hour through 1-inch tubing choke, total depth 3,685 feet. Stanolind-Simms and others' No. 2-A Flewellen, top sand 3,613 feet, initial production 90 bbls. per hour through open tubing, total depth 3,629 feet; No. 3-A Flewellen, top sand 3,597 feet, initial production 107 bbls. per hour through open tubing, total depth 3,611 feet; No. 3 Key, top sand 3,513 feet, initial production 90 bbls. in one-half hour through open tubing, total depth 3,595 feet. Sun Oil Co.'s No. 3-A A. Tooke, top sand 3,576 feet, initial production 163 bbls. per hour through open tubing choke, total depth 3,610 feet.

A. H. Tarver and others' No. 2 J. W. Free, top sand 3,636 feet, initial production 100 bbls. per hour through three-fourths-inch tubing choke, total depth 3,660 feet. The Texas Company's No. 6 E. M. Woods, top sand 3,548 feet, initial production 140 bbls. per hour through three-fourths-inch tubing choke, total depth 3,576 feet. Tidal Oil Co.'s No. 4 Lake Devernia, top sand 3,499 feet, initial production 25 bbls. in 10 minutes through open tubing, total depth 3,530 feet; No. 4 A. Davis, top sand 3,545 feet, initial production 29 bbls. in 10 minutes through open tubing, total depth 3,574 feet; No. 3 B. Moore, top sand 3,495 feet, initial production 30 bbls. in 10 minutes through open tubing, total depth 3,538 feet. Yount Lee Oil Co.'s No. 3-A Maud Smith, top sand 3,504 feet, initial production 75 bbls. per hour through eleven-sixteenths-inch tubing choke, total depth 3,524 feet.

South Gregg County

Amerada Petroleum Corp.'s No. 1 C. Jenkins, top sand 3,534 feet, initial production 75 bbls. per hour through three-fourths-inch tubing choke, total depth 3,551 feet. Barnsdall Oil Co.'s No. 1 John Douglas, top sand 3,697 feet, initial production 40 bbls. in one-fourth hour through 1-inch tubing choke, total depth 3,704 feet. F. A. Bates' No. 2 M. T. Cole, top sand 3,542 feet, initial production 71 bbls. per day pinched, total depth 3,555 feet. Byrd-Frost Oil Co.'s No. 4 M. B. Hughey, top sand 3,538 feet, initial production 180 bbls. per hour through 2-inch tubing choke, total depth 3,558 feet. Liner, Inc.'s No. 1 J. Clayton, top sand 3,712 feet, initial production 71 bbls. per day pinched, total depth 3,717 feet. D. D. D. Oil Co.'s No. 1 Sarah Dansby, top sand 3,725 feet, initial production 120 bbls. per hour through 1-inch tubing choke, total depth 3,729 feet.

Gulf Production Co.'s No. 2 W. Clayton, top sand 3,536 feet, initial production 90 bbls. per hour through three-fourths-inch tubing choke, total depth 3,556 feet; No. 11 Hilburn, top sand 3,527 feet, initial production 82 bbls. per hour through three-fourths-inch tubing choke, total depth 3,541 feet; No. 15 Hilburn, top sand 3,566 feet, initial production 77 bbls. per hour through three-fourths-inch tubing choke, total depth 3,579 feet; No. 1 E. L. Walker, top sand 3,529 feet, initial production 70 bbls. per hour through three-fourths-inch tubing choke, total depth 3,546 feet. Quad Oil Corp.'s No. 2-A B. Duncan, top sand 3,644 feet, initial production 71 bbls. per day pinched through tubing, total depth 3,655 feet. Rajo Oil Corp.'s No. 2 McCormick, top sand 3,711 feet, initial production 62 bbls. per hour through three-fourths-inch tubing choke, total depth 3,714 feet.

Republic Production Co.'s No. 3 Clayton Heirs, top sand 3,588 feet, initial production 50 bbls. in one-half hour through 1-inch tubing choke, total depth 3,614 feet. Root and Maben's No. 1 Wynne, top sand 3,690 feet, initial production 71 bbls. per day pinched through tubing, total depth 3,652 feet. Sinclair-Prairie Oil Co.'s No. 21 M. T. Cole, top sand 3,643 feet, initial production 71 bbls. in one-half hour through open tubing, total depth 3,648 feet; No. 11-B A. A. King, top sand 3,451 feet, initial production 71 bbls. in 23 minutes through open tubing, total depth 3,483 feet; No. 13-B A. A. King, top sand 3,488 feet, initial production 71 bbls. in 21 minutes through open tubing, total depth 3,488 feet; No. 6 Joe E. Lawther, top sand 3,581 feet, initial production 71 bbls. in 25 minutes through open tubing, total depth 3,617 feet. Sneed and others' No. 2 Griffin Davis, top sand 3,600 feet, initial production 43 bbls. in one-fourth hour through three-fourths-inch tubing choke, total depth 3,630 feet. Stodel Oil Co.'s No. 3 Smith, top sand 3,599 feet, initial production 62 bbls. in one-half hour through open 2-inch tubing, total depth 3,608 feet.

The Texas Company's No. 3 R. B. Walls, top sand 3,645 feet, initial production 84 bbls. per hour through three-fourths-inch tubing choke, total depth 3,660 feet. Dr. F. L. Thompson's No. 3 Hilburn, top sand 3,632 feet, initial production 83 bbls. per hour through three-eighths-inch tubing choke, total depth 3,642 feet. Tidal Oil Co.'s No. 8 Barton, top sand 3,543 feet, initial production 30 bbls. in 10 minutes through open tubing, total depth 3,558 feet; No. 3 Tom Bell, top sand 3,678 feet, initial production 71 bbls. per day pinched, total depth 3,680 feet.

Nacogdoches County

Creighton Drilling Co.'s No. 1 J. M. Stewart, dry and abandoned, total depth 3,226 feet. Gainer and others' No. 1 Neil Well, dry and abandoned, total depth 3,430 feet. Tex. Oklahoma Oil Co.'s No. 1 Driver, dry and abandoned, total depth 3,808 feet. Joiner and Henson's No. 1 Ande Legg, dry and abandoned, total depth 3,920 feet.

North Rusk County

Cordova Union Oil & Gas Co.'s No. 8 J. S. Bean, top sand 3,555 feet, initial production 71 bbls. per day pinched, total depth 3,806 feet. Darby Petroleum Co.'s No. 5-B C. O. Christian, top sand 3,740 feet, initial production 71 bbls. per day pinched, total depth 3,760 feet. Empire Gas & Fuel Oil Co.'s No. 6 C. O. Christian, top sand 3,737 feet, initial production 71 bbls. per day pinched, total depth 3,767 feet.

Humble Oil & Refining Co.'s No. 13-A S. S. Laird, top sand 3,600 feet, initial production 27 bbls. per hour through 1½-inch tubing choke, total depth 3,683 feet; No. 3 J. T. Robertson, top sand 3,631 feet, initial production 40 bbls. in one-half hour through three-fourths-inch tubing choke, total depth 3,711 feet; No. 4-B Henry Sexton, top sand 3,668 feet, initial production 54 bbls. per hour through three-fourths-inch tubing choke, total depth 3,771 feet; No. 2-C Henry Sexton, top sand 3,763 feet, initial production 42 bbls. in one-half hour through three-fourths-inch tubing choke, total depth 3,787 feet.

S. S. Laird Oil Co.'s No. 4 J. N. Peterson, top sand 3,587 feet, initial production 176 bbls. per hour through three-

(Continued on Page 59)

EAST AND EAST CENTRAL TEXAS WILDCATS

Week Ending April 18

ANDERSON COUNTY

Company, well, farm name, section and block—	Remarks:
C. R. Wilmuth et al's No. 1 N. B. Watson, 500 ft. from W line and 4,850 ft. from N of S line of survey in S½ of 129-ac. tract, M. Main Sur.	T. D. 1,538 ft.

ANGELINA COUNTY

Helburt et al's No. 1 Long Bell Lumber Co., 160 ft. from S line and 200 ft. from E line of Sec. 9, H.&T.B. Sur.	Location.

BOWIE COUNTY

Burnham-Robertson and Greer's No. 1 F. O. Weiss, 850 ft. from N line and 200 ft. from W line of B. H. Williams 50-ac. tract, Jessie Dean Sur.	Coring 1,647 ft.

CHEROKEE COUNTY

Bridges and Candler's No. 1 Berryman, center of Berryman tract, H. Kimble Sur.	S.D. 1,000 ft.
Harper and Perkinson's No. 1 J. T. Lowery, 650 ft. from N line, 150 ft. from W line of Blk. No. 5 on a 139.6-ac. tract, 4 miles W of Troupe, C. B. Jennings Sur.	S. D. 3,366 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 H. D. Kelley, 330 ft. from S line and 537 ft. from E line of lease, M. De Los Santos Sur.	Derrick.
Mid-Kansas Oil & Gas Co.'s No. 9 M. M. Cross, 1,540 ft. from N line of Cherokee County and 537 ft. from W line of lease, Fowlks Sur.	Derrick.
Mustang Oil Co.'s No. 1 Decker and Whiteman, east side of W 75 acres of S 150 acres of survey, 3 miles S of Maydelle, F. W. Fulgham Sur.	Derrick.
Patton-Liver and Murray's No. 1 Eddie Toole, center of one-half-acre tract, 6 miles E of Troupe, De Los Santos Sur.	Rig up.
Dr. Tubbs et al's No. 1 J. H. Sharp, 330 ft. from N line and 71 ft. from E and W lines of 3½-ac. tract, M. De Los Santos Coy Sur.	Derrick.
Wilson & Stubbs' No. 1 L. Robert, 450 ft. from S and 150 ft. from W line of lease, J. B. Wolfin Sur.	S.D. 2,035 ft.; will skid derrick.

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Reduction in West Texas Allowables

Penn Pool, Big Lake and Howard-Glasscock Districts Affected. New Wildcats in Irion and Howard. Archer County Play

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Apr. 18.—The Railroad Commission announced a reduction in the daily allowable for the Penn Pool, Ector County, Big Lake Field, Reagan County, and Howard-Glasscock County Pool, on April 15. The Penn outlet was reduced to 4,070 bbls. daily, the Big Lake Field to 20,000 bbls., and the Howard-Glasscock Pool from 26,000 to 24,000 bbls. per day.

Runs had previously been reduced in the Penn Pool, Ector County, by the Humble Oil & Refining Co., and the pipe line nominations in the Howard-Glasscock County Pools had been reduced, consequently the new reductions mean but little change in previous allowables. Humble will take 2,644 bbls. per day from the Penn Pool from April 16 to May 1, Cosden Pipe Line Co. will take 501 bbls. and the Gulf Pipe Line Co. 928 bbls.

New Gas Show in Irion

Plymouth Oil Co.'s No. 1 Suggs, deep wildcat drilling in Section 3,081, Block 28, H.&T.C. Survey, 15 miles northwest of Mertzon in Irion County, struck a pocket of gas during the week, sticking the tools in the hole and causing a fishing job. This puff of gas was encountered in lime at 7,533 feet. This is the third showing of gas to be logged in the well. It has also made some oil from 6,809-13 feet, and above that at 6,795-6,804 feet.

New Test in Reagan

Group No. 1 Oil Corp. and Continental Oil Co. have staked location for their fifth deep test in the Big Lake Field, Reagan County. It will be a south offset to the Big Lake Oil Co.'s No. 7-C University which was announced last week. The latter company's No. 6-C University is down 7,750 feet, and the two new tests will make three deep tests drilling in the field, with nine producers already producing from the deep pay below 8,500 feet.

The Southern States Co. of Shreveport, La., will put a shoe in Group No. 1 Oil Corp. and Continental Oil Co.'s No. 2-C University to separate the two different pay horizons found in that well, so as to produce one gravity oil from one horizon through the tubing, and another gravity oil through the casing, from the second horizon.

No. 2-C University has just been cemented back 25 feet from 8,840 feet, and gauged 1,363 bbls. during the first 17 hours after it was plugged back.

New Wildcats

Two more wildcat locations were staked in the West Texas district during the week, with one other wildcat proposed, while four other locations were staked in producing areas.

W. S. Guthrie staked location for a wildcat test in Section 115, Block 97, H.&T.C. Survey, Irion County, and the Sinclair-Prairie Oil Co. staked location for its No. 2 Dodge in Section 11, Block 30, Township 1s, T.&P. Survey, eastern Howard County. The Sinclair Oil & Gas Co. opened this area to production two years ago by completing a small well on its Dodge estate lease.

C. C. Duffy proposes drilling on the Crabb Ranch, in Section 25, Block 45, Township 2s, T.&P. Survey, approximately 4½ miles northwest of the Penn Pool. Ector County. Location has not yet been staked, but this area to the northwest of the pool is considered likely looking acreage, many figuring a saddle separates the Penn Pool with a larger producing area running to the northwest. This test may prove whether that theory is correct.

Sterling County

Sterling County has been getting a small lease "play," around 7,000 or 8,000 acres having been taken by the Humble Oil & Refining Co., Gulf Production Co., and independent operators. The majority of this acreage is in the southern part of the county, running from east to west, near Broome siding. The county has had a little production, but not of sufficient importance to build a pipe line outlet, the shallow tests on the hill 2 miles south of Sterling City having stood idle for several years after having pumped a little oil. The Chicago-Texas Oil & Gas Syndicate drilled these shallow producers. The county may eventually be the scene of deeper drilling, some company possibly drilling a test in search of production from the Ordivician lime, found in the Big Lake Field, Reagan County, to the southwest.

The Landreth Production Co. will drill a test in Section 15, Block 45, Township 1n, T.&P. Survey, 3½ miles northwest of Stanolind Oil & Gas Co.'s No. 1 Cowden, discovery well in the northwest part of Ector County.

Wichita Falls

Fain and McGaha Oil Co.'s No. 1 fee in Block 3, League 3, 9 miles from Wichita Falls in Archer County, was the feature of this district during the week when it came in swabbing 155 bbls. from sand topped at 1,789 feet. Two feet of sand was drilled when the hole filled and started slopping over. Gravity of the oil tests 40 degrees.

It is approximately 2 miles west of old production on the J. L. Jackson lands, and opens a new producing horizon in the Holliday area. A 24-hour test will be given the well to determine its daily capacity. The well will bring about a new lease and royalty play in the area, and new tests will probably be started within a few weeks.

Ed Lawson and others will drill a deep test to the Canyon series on the W. L. Andrews farm 4 miles southwest of Chalk Hill, and 4,000 feet west of Gose-Waggoner's No. 1 Langford Investment test which was completed recently as a Canyon test, but which only had a small showing of oil. Contract depth on the Lawson test will be 2,300 feet.

DAILY AVERAGE OIL SHIPMENTS FROM WEST TEXAS

Week Ending April 7

Shipments Through Main Trunk Lines

Company, size and location—	Bbls.
Atlantic P. L. Co., 10-in., Houston	20,288
Gulf P. L. Co., 10-in., Ranger	25,722
Humble P. L. Co., 2-8-in., San Angelo	32,598
Humble P. L. Co., 12-in., Ingleside	45,682
Illinois P. L. Co., 2-8-in., Del Rio	30,081
Magnolia P. L. Co., 8-in., DeLeon	none
Shell P. L. Corp., 10-in., Cushing, Ok.	36,346
Shell P. L. Corp., 10-in., Houston	14,306
Texas P. L. Co., 12-in., Houston	14,630
Total	219,653
Tank car shipments	none
Shipments to refineries	21,726
Total daily average distribution	241,379
Daily average production (including Lea County, New Mexico)	214,185
Daily average from storage	27,194

COMPLETIONS IN WEST TEXAS

Pecos County

Culberson Brothers' No. 5 Tippett, dry and abandoned, total depth 486 feet; No. 6 Tippett, dry and abandoned, total depth 523 feet.

Winkler County

Richardson and others' No. 1 Halley, dry and abandoned, total depth 3,061 feet.

COMPLETIONS IN PANHANDLE DISTRICT

Carson County

Texoma Natural Gas Co.'s No. 1-S Burnett, top pay 2,245 feet, initial production 28,900,000 feet of gas, total depth 2,480 feet.

Gray County

Beck and others' No. 1 Sullivan, top pay 3,080 feet, initial production 10 bbls., total depth 3,170 feet. Danciger Oil & Refining Co.'s No. 3 Byrnne, top pay 3,110 feet, initial production 250 bbls., total depth 3,249 feet, shot 180 quarts 3,127-3,246 feet. Skelly Oil & Gas Co.'s No. 5 East Schaffer, top pay 3,170 feet, shot 80 quarts 3,173-3,300 feet and 195 quarts 3,171-3,300 feet, initial production 280 bbls., total depth 3,300 feet. Stanolind Oil & Gas Co.'s No. 2 Waggoner, top pay 3,168 feet, shot 200 quarts 3,137-3,242 feet, initial production 250 bbls., total depth 3,252 feet.

Hutchinson County

Huber Petroleum Co.'s No. 1 Premier-Johnson, top pay 3,116 feet, initial production 70 bbls. oil with 4,000,000 feet of gas, total depth 3,151 feet.

COMPLETIONS IN WICHITA FALLS DISTRICT

Archer County

Beard, Hammond & Steel's No. 1 J. S. Bridwell, dry and abandoned, total depth 2,450 feet. Deep Oil Development & Lindsey's No. 2 Wilson, oil sand 2,206-11-17 feet, initial production 790 bbls., total depth 2,217 feet; No. 3 Wilson, oil sand 2,209-19 feet, initial production flowing 740 bbls., total depth 2,219 feet. Easter and Reynolds' No. 2 Churchwell, dry and abandoned, total depth 1,176 feet. H. H. Fraser's No. 1 Plowman, dry and abandoned, total depth 2,303 feet. Holbrook and Wood's No. 1 Perkins, dry and abandoned, total depth 765 feet. C. E. Jones' No. 2 Thomas, oil sand 647½-49 feet, initial production 10 bbls., total depth 649 feet. Shappell Oil Co.'s No. 1 Hawley, temporarily abandoned, total depth

WILDCAT OPERATIONS IN WEST TEXAS

Week Ending April 18

ANDREWS COUNTY

Company, well, farm name, section and block—	Remarks—
Fuhrman Pet. Co.'s No. 1 Boner, 1,320 ft. from N and 440 ft. from W, Sec. 24, Blk. A-43, P.S.L.	Show gas 3,005 ft.; drlg. 3,840 ft.

BREWSTER COUNTY

Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur.	S.D. 1,935 ft.
E. L. Chapman's No. 1 Skinner, C SW SE Sec. 106, Blk. 2, G.C.&S.F. Sur.	S.D. 1,302 ft.
Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 930 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur.	S.D. 2,900 ft.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 353, 7 miles south Alpine	S.D. 1,750 ft.

COCHRAN COUNTY

Penn Oil Co.'s No. 1 Slaughter, C Labour No. 80 of League 139, Carson County School Lands	T.D. 5,052 ft.

CONCHO COUNTY

Beesley et al's No. 1 Waring Estate, 460 ft. from N and E, Sec. 163, T.&N.O. Sur.	Drlg. 1,450 ft.

CROCKETT COUNTY

Doleman & Moore's No. 1 Ferner, 2,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 2, I.&G.N. Sur.	Spudded and S.D.

COKE COUNTY

Mid-Kansas Oil & Gas Co.'s No. 1 Hearn, 980 ft. from S and W, Sec. 271, Blk. 1-A, H.&T.C. Sur.	Drlg. 575 ft.

DAWSON COUNTY

Albaugh et al's No. 1 Robinson, C NW Sec. 46, Blk. M, E.L.&R.R. Sur.	To resume drilling.

ECTOR COUNTY

Thomas et al's No. 1 Edwards, 330 ft. from S, 2,310 ft. from E, Sec. 38, Blk. 43, Twp. 3s, T.&P. Sur.	Spudded.
H. F. Wurts' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW Sec. 16, Blk. 46, Twp. 3s, G. M. M.Br.&A. Sur.	T.D. 3,275 ft.

EL PASO COUNTY

Tri-State Oil Co.'s No. 1 Bobadella, 1,335 ft. from S and E lines Sur. 254, S.P. No. 7,247	S.D. 2,257 ft.

(Continued on Next Page)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending April 18

BRISCOE COUNTY

Company, well, farm name, section and block—	Remarks:
Humble O. & R. Co.'s No. 1 C. Adair est., 2,500 ft. from N line, 2,100 ft. from E line, Sec. 7, Blk. G-6	Drlg. 3,225 ft.

CARSON COUNTY

Danciger's No. 4 Byrum, 330 ft. from N and E, Sec. 188, Blk. 3, I.&G.N. Sur.	Cellar.
H. A. M. Oil Co.'s No. 2 Cooper, 330 ft. from S and E. Sec. 5, Blk. 9, I.&G.N. Sur.	Location.
Pulse-Shell Pet. Corp.'s No. 1 Byrum, 330 ft. from N and W, W½ NE, Sec. 188, Blk. 3, I.&G.N. Sur.	Rigging up standard tools.
Skelly Oil Co.'s No. 16 West Schaffer, 1,265 ft. from S and 440 ft. from W, Sec. 88, Blk. 4, I.&G.N. Sur.	Drlg. 2,835 ft.
Skelly Oil Co.'s No. 17 West Schaffer, 1,320 ft. from S, 440 ft. from E, Sec. 87, Blk. 4, I.&G.N. Sur.	Rig.
Texoma Nat. Gas Co.'s No. 1-E Dauer, 1,335 ft. from S, 1,327 ft. from E, Sec. 73, Blk. 4, I.&G.N. Sur.	Rig.
Texoma Nat. Gas Co.'s No. 1-G Halduk, 2,589 ft. from N, 1,531 ft. from W, Sec. 21, Blk. 4, I.&G.N. Sur.	Drlg. 350 ft.

CHILDRESS COUNTY

C. L. Sloan et al's No. 1 B. P. Smith, Sec. 49, F. P. Knott lands	T.D. 5,000 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 21, H.&G.N. Sur.	S.D. 2,508 ft.
Downey et al's No. 1 Beasley, SE cor. SW SE, Sec. 95, Blk. 15, H.&G.N. Sur.	Rigging up.

DEAF SMITH COUNTY

Western Union Oil Co.'s No. 1 Farwell, C NW, Sec. 18-3n-3e	S.D. 275 ft.

GRAY COUNTY

Back & Barber's No. 1 Back, 660 ft. from S, 330 ft. from W, Sec. 140, Blk. 25, H.&G.N. Sur.	S.D. 2,428 ft.
Boyes et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 65, Blk. 25, H.&G.N. Sur.	Spudded and S.D.
Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur.	Drlg. 3,635 ft.

(Continued on Next Page)

A new era

THE FUTURE of Natural Gas will be what the future of American Industry proves to be. Both are quiescent, now. Both are awaiting the readjustment between supply and demand. No one believes for a moment that either has reached the limit of its expansion. Everyone looks forward to future developments, in both Industry and Natural Gas, that will dwarf even the vast achievements to date.

WITH the new era that is surely coming, will come new problems demanding—more than ever before—breadth of vision, sound judgment based on experience, command of confidence and resources. *** The Hope Engineering Company—with the mastery of its specialty which its 25 years of success have given it—will attack these new problems with the courage born of "the habit of success".

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2,902 feet. L. T. Burns' No. 1 W. J. Logan, sandy lime 1,167-79 feet, initial production 5 bbls., total depth 1,180 feet; No. 3 "A" Logan, sandy lime 1,159-71 feet, shot 70 quarts, initial production 10 bbls., total depth 1,171 feet. H. C. Dean's No. 1 Abercrombie, sandy lime 1,198-99-1,214 feet, initial production 20 bbls. oil and 5 bbls. of water, total depth 1,216 feet.

Kimmell and Woofter's No. 8 Williams, temporarily abandoned; No. 9 Williams, temporarily abandoned; No. 10 Williams, temporarily abandoned. W. E. Maxson, Jr.'s No. 12 F. C. Green, sandy lime 1,115-35 feet, initial production 50 bbls., total depth 1,135 feet. George L. Pace's No. 3 Green, sandy lime 1,173-98½ feet, shot 80 quarts, initial production 75 bbls., total depth 1,198½ feet. Perkins and Cullum's No. 1 Abercrombie, sandy lime 1,189-91 feet, initial production 40 bbls., total depth 1,194 feet. Petroleum Production Co.'s No. 1 Richardson, dry and abandoned, total depth 1,150 feet. Schultz and Weaver's No. 8 F. C. Green, sandy lime 1,116-34 feet, initial production 35 bbls., shot 70 quarts, total depth 1,134 feet. Underwood Drilling Co.'s No. 1 Ward, dry and abandoned, total depth 1,230 feet.

Montague County

Bridwell Oil Co.'s No. 2 J. H. Brown, oil sand 1,251-57 feet, total depth 1,259 feet, plugged back to 1,257 feet, initial production 125 bbls.

Jack County

R. J. Brown's No. 1 Plemmons, dry and abandoned, total depth 750 feet. Hughes and Quinlivan's No. 1 Humphreys, temporarily abandoned, total depth 1,775 feet. Texas Plains Oil Co.'s No. 1 Terrill, junked and abandoned, total depth 678 feet.

Wichita County

F. C. Baldwin's No. 4 Overall, oil sand 958-65 feet, oil sand 1,010-34 feet, initial production 23 bbls., total depth 1,103 feet, plugged back to 965 feet. R. R. Clark and others' No. 15 Bickley, oil sand 852-63 feet, initial production 38 bbls., total depth 863 feet. G. W. Cooper's No. 17 Waggoner, dry and abandoned, total depth 793 feet; No. 18 Waggoner, oil sand 578-92 feet, initial production 5 bbls., total depth 592 feet. George J. Proctor's No. 5 Honaker, abandoned location. Reno and Goldsmith's No. 6 Roller, oil sand 1,797-99 feet, initial production 7 bbls., total depth 1,799 feet.

Young County

Floyd Ard's No. 1 Jeffery, dry and abandoned, total depth 790 feet. R. S. Bollin's No. 1 Brown, oil sand 563-66 feet, initial production 30 bbls. oil and 15 bbls. of water, total depth 566 feet; No. 2 Brown, dry and abandoned, total depth 620 feet; No. 1 Gardner, dry and abandoned, total depth 503 feet. E. P. Brown's No. 1 Fay Clarke, dry and abandoned, total depth 950 feet. Gable Oil Co.'s No. 23 Snider, dry and abandoned, total depth 606 feet. J. D. Carpenter's No. 10 Barrett, dry and abandoned, total depth 630 feet. Cavin and Lowry's No. 1 Hull, dry and abandoned, total depth 1,113 feet. Cooper Mitchell and others' No. 4 Dunagan, sandy lime 937-42-98-1,000½ feet, initial production 10 bbls., total depth 1,005 feet. R. J. Dean, Jr.'s No. 1 Newman, dry and abandoned, total depth 601 feet. F. H. E. Oil Co.'s No. 3 Finch, dry and abandoned, total depth 857 feet.

Thomas Holcomb's No. 1 Carpenter, oil sand 884-89 feet, initial production 10 bbls., total depth 889 feet. L. E. Hultz and others' No. 1 Jones, dry and abandoned, total depth 720 feet. E. W. Hunt's No. 1 Hunt, dry and abandoned, total depth 1,056 feet. W. N. Maer's No. 1 Routon, dry and abandoned, total depth 840 feet. Marshall Perry, Snoddy's No. 1 Williams, dry and abandoned, total depth 653 feet. W. A. and C. A. Stickey's No. 1 Belknap, dry and abandoned, total depth 440 feet. Terrell and Wells' No. 1 Hardy, dry and abandoned, total depth 706 feet. United Producers Co.'s No. 1 Morris, dry and abandoned, total depth 750 feet.

Wooten and Reed's No. 3 Robinson, oil sand 647-50½ feet, initial production 40 bbls., total depth 650 feet; No. 2 Josh Swan, oil sand 686-93 feet, initial production 38 bbls., total depth 693 feet. Christie Brothers' No. 1 McLaren, oil sand 2,612-16 feet, initial production 12 bbls. oil and 15 bbls. of water, total depth 2,616 feet. L. A. Long and others' No. 2 Williams, dry and abandoned, total depth 4,040 feet. Prairie Oil & Gas Co.'s No. 1 O. D. Lisle, dry and abandoned, total depth 3,310 feet. W. S. Randell's No. 2 Kisinger old well drilled deeper, dry and abandoned, total depth 2,536 feet.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 54)

Continental Oil Co.'s No. 1-A Wright, 330 ft. from S and E of E half NW, Sec. 13, Blk. 3, I.&G.N. Sur. ..... Building derrick.

Foster's No. 1 Webb, 330 ft. from S and W, Sec. 43, Blk. 23, H.&G.N. Sur. ..... Ran 8-in. csg. 1,520 ft.

Graham et al's No. 1 Barrett, 990 ft. from N, 330 ft. from E, Sec. 113, Blk. 3, I.&G.N. Sur. ..... Moving in material.

Granite Prod. Co.'s No. 1 Chapman, 275 ft. from N line, 110 ft. from W line, S½ SW, Sec., of Blk. 26, H. &G.N. Sur. ..... Drlg. 2,155 ft.; show gas 2,138 ft.

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 300, Blk. 2-B, H.&G.N. Sur. ..... S.D. 3,010 ft.; shot with 30 qts. from 2,995-3,010 ft.

Jewel Oil Co.'s No. 1 Meers, 330 ft. from S and W, NW SW, Sec. 106, Blk. 3, I.&G.N. Sur. ..... Fishing for tools 3,297 ft. (SLM)

Mid-Kansas O. & G. Co.'s No. 1 Webb, 990 ft. from N, 330 ft. from W of NE, Sec. 61, Blk. 25, H.&G.N. Sur. .. Cellar.

Nelson et al's No. 1 Crowe, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur. ..... S.D. 2,620 ft.; estimated 4,000,000 ft. gas.

Nipper et al's No. 1 Morse, 330 ft. from N and E, Sec. 1, Blk. 26, I.&G.N. Sur. ..... Fishing 2,635 ft.

Nabob Oil Co.'s No. 1-E Morse, 330 ft. from S and W of W half SE, Sec. 67, Blk. 25, H.&G.N. Sur. ..... Cellar.

Operators Royalty & Prod. Co.'s No. 2 Arnold, 330 ft. from S and W, Sec. 149, Blk. 3, I.&G.N. Sur. ..... Rig.

Parton & Holt's No. 2 Morse, 330 ft. from W, 350 ft. from N, W¼ SW, Sec. 5, Blk. 26, H.&G.N. Sur. .... Rigging up cable tools.

Phillips Pet. Co.'s No. 6 Wood-Wright, 330 ft. from N and E, Sec. 13, Blk. 3, I.&G.N. Sur. ..... Rigging up rotary.

Pulse-Shell Pet. Corp.'s No. 1 Culler, 330 ft. from S and E, Sec. 173, Blk. 3, I.&G.N. Sur. ..... Rig.

Saulsbury et al's No. 1 Davidson, 330 ft. from S and W, Sec. 87, Blk. B-2, H.&G.N. Sur. ..... Rigging up standard tools.

Saunders et al's No. 2 Sullivan, 822 ft. from W. and 231 ft. from NE, 160 ft. S, 264 ac. of N½, Sec. 136, Blk. 3, I.&G.N. Sur. ..... Will plug back to 3,275 ft. and shoot.

Shamrock Oil & Gas Co.'s No. 3 Saunders, 330 ft. from S and W, Sec. 40, Blk. 3 ..... Drlg. 710 ft.

Skelly Oil Co.'s No. 6 East Schaffer, 440 ft. from S line and 440 ft. from E line of NE Sec. 189, I.&G.N. Sur., Blk. 3 ..... T.D. 3,270 ft.; T.P. 3,200 ft.; shot 60 qts. 3,195-3,255 ft.; damaged pipe.

Skelly Oil Co.'s No. 7 East Schaffer, 440 ft. from S and W, Sec. 171, Blk. 3, I.&G.N. Sur. ..... Drlg. 2,120 ft.

Skelly Oil Co.'s No. 8 East Schaffer, 220 ft. from N, 440 ft. from W, Sec. 173, Blk. 3, I.&G.N. Sur. ..... T.D. 1,145 ft.; standardizing.

Skelly Oil Co.'s No. 9 East Schaffer, 1,320 ft. from S, 440 ft. of N½, Sec. 189, Blk. 3, I.&G.N. Sur. ..... T.D. 1,144 ft.; standardizing.

Tarber's No. 1 Saunders, 330 ft. N and W, Sec. 3, Blk. 1, B.B.&S.F. Sur. ..... Location.

Texas Co.'s No. 7 Wright, 330 ft. from N and W, Sec. 13, Blk. 3, I.&G.N. Sur. ..... Drlg. 615 ft.

Travis' No. 3 Back, 330 ft. from S, 2,300 ft. from E, Sec. 44, Blk. 25, H.&G.N. Sur. ..... Drlg. 430 ft.

Warner Oil Co.'s No. 2 Chapman, 382 ft. N, 220 ft. W of E 20 ac. of N½ NW, Sec. 69, Blk. 25, H.&G.N. .. Cellar.

HUTCHINSON COUNTY

Baso's No. 1 Moore, 330 ft. from S and 330 ft. from E, in 80 ac. in NW, Sec. 21, Blk. M-21, T.C.R.R. Sur. ..... Drlg. 2,920 ft.

Combination O. & G. Co. and Alspaugh's No. 1 Johnson, 330 ft. from S line, 330 ft. from E line of NW SW, Sec. 4, Blk. Y, A.&B. Sur. ..... Ran 8¼-in. csg.; T.D. 2,175 ft.

Danciger O. & R. Co.'s No. 1 Johnson, 330 ft. N and W, SE, Sec. 34, Blk. Y, A.&B. Sur. ..... Spudded and S.D.

Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 81, Blk. 46, H.&T.C. Sur. .... S.D. 450 ft.

Huber Pet. Co.'s No. 1-A Weatherly, 330 ft. from N and W, Sec. 25, Blk. Y, A.&B. Sur. ..... Spudded.

Liner Drlg. Co.'s No. 1-D Johnson, 330 ft. from N and E, Sec. 6, Blk. 1, B.&B. Sur. ..... S.D. 3,152 ft.; plugging back to 3,146 ft.; to pull 5-in. csg.

Oates and Marrow's No. 1 W. A. Starnes, C SE SW SE Sec. 24, M-23 T.C.R.R. Sur. ..... T.D. 2,995 ft.; pull big pipe.

Pharis Oil Co.'s No. 5 Smith, 660 ft. from N and W, SW, Sec. 14, Blk. Y, M.&C. Sur. ..... Spudded.

Stekoll's No. 1-D Whittenburg, 330 ft. from S, 450 ft. from E, Sec. 38, Blk. M-23, H.&T.C. Sur. ..... Drlg. 1,325 ft.

Timms-Deatch's No. 4 Moore, 330 ft. N and W, Sec. 124, Blk. 4, I.&G.N. Sur. ..... Rig.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ..... T.D. 5,003 ft.

MOORE COUNTY

Dogie Oil Co.'s No. 1 Greenwald, 330 ft. from N and W, Sec. 277, Blk. 44, H.&T.C. Sur. ..... T.D. 30 ft.; drlg. water well.

Dana O. & G. Co.'s No. 1 Robertson et al, 330 ft. from S and E, Sec. 165, Blk. 3-T, T.&N.O. Sur. ..... Cellar.

Interstate's No. 1 Nield, C NE, Sec. 18, Blk. 44, H.&T. C. Sur. ..... Rig up.

Magnolia Pet. Co.'s No. 1 Nield, 330 ft. from S and E of N½, Sec. 361, Blk. 44, H.&T.C. Sur. ..... Show oil 3,421 ft.; drlg. 3,590 ft.

Pollard et al's No. 1 Hall, 330 ft. S and E, NE, Sec. 131, Blk. 3-T, T.&N.O. Sur. ..... Rig on ground.

Sunray Oil Co.'s No. 2 Jones, 330 ft. N and W, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. ..... Rig on ground.

Sunset Oil Co.'s No. 1 R. O. Brumley, 330 ft. from N line and 330 ft. from W line of SW, Sec. 360, H.&T.C. Sur. ..... Estm. 15,000,000 ft. gas; drlg. 3,430 ft.

Sunset Oil Co.'s No. 1 Dore, 330 ft. from N and W, W½, Sec. 318, Blk. 44, H.&T.C. Sur. ..... Drlg. 2,832 ft.; to standardize.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ..... S.D. 530 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. ..... S.D. 400 ft.

Chambers et al's No. 1 Herring, CNL, Sec. 20, Blk. S, G.C.&S.F. Sur. ..... S.D. 3,555 ft.

PARMER COUNTY

Magnolia Pet. Co.'s No. 1 Wilson, 330 ft. from N and W, SE Sec. 73, H. Kelly Sur. ..... S.D. 4,415 ft.

ROBERTS COUNTY

Chicken Creek Oil Co.'s No. 1 Ledrick, 330 ft. N and W, Sec. 55, Blk. C, G.&M. Sur. ..... T.D. 3,990 ft.; to set 8-in. csg.

Travis et al's No. 1 Cunningham, 330 ft. S and W, Sec. 74, Blk. M-2, H.&G.N. Sur. ..... S.D. 2,690 ft.

WHEELER COUNTY

Devore & Robinson's No. 1 Sitter, 2,310 ft. from S and E of E½ of Sec. 33, Blk. 24, H.G.N. Sur. ..... S.D. 2,193 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 54)

FISHER COUNTY

Condor Petroleum Co.'s No. 1 Steele, 660 ft. from S and 330 ft. from W of W half of SE Sec. 210, B.B.B.&C. Ry. Sur. ..... S.D. 700 ft.; running 12½-in. csg.

Cranfill & Reynolds' No. 1 George, 400 ft. from N and 330 ft. from E, Sec. 200, Blk. 1, B.B.B.&C. Sur. ..... T.D. 5,255 ft.; underreaming 5 3/16-in. csg.

Sinclair-Prairie's No. 2 Steele, 250 ft. from N and W of NE Sec. 72, H.T.&B. Sur. ..... Location.

Southern Oil Corp. of America's No. 1 Wm. Flannigan, 240 ft. from E and 165 ft. from W line of S 20 acres of SW, Sec. 20, B.B.B.&C.R.R. Sur. ..... Drlg. 3,105 ft.; T.P. 3,087 ft.; hole full of oil.

GLASSCOCK COUNTY

Mann et al's No. 1 fee, 330 ft. from N and 1,980 ft. from E, Sec. 27, Blk. 34, Twp. 3s, T.&P. Sur. ..... Drlg. 1,075 ft.

Humble Oil & Ref. Co.'s No. 2 Arrington, 1,300 ft. from W, Sec. 22, Blk. 33, Twp. 2s, T.&P. Sur. ..... Location.

Peck & Service's No. 1 Gillean, 2,310 ft. from S, 1,650 ft. from E, Sec. 21, Blk. 33, Twp. 2s, T.&P. Sur. ..... Drlg. 905 ft.

Penn Oil Co. et al's No. 1 F. A. Hobenstreit, 2,310 ft. from N and E lines of Sec. 47, Blk. 36, Twp. 3s, T.&P. Sur. ..... T.D. 640 ft.; underreaming 12½-in. csg.

GARZA COUNTY

Penny & Posey's No. 1 Justice, 1,980 ft. from S and 1,650 ft. from E of Sec. 25, Blk. 6, H.&G.N. Sur. (3,500-ft. cable tool test) ..... T.D. 3,320 ft.

HOWARD COUNTY

American-Maracaibo's No. 5-A Settles, 1,896 ft. from N, 1,884 ft. from W, Sec. 6, Blk. 32, T.&P. Sur. ..... Rig.

F. H. E. Oil Co.'s No. 1 Denman, 330 ft. from N, 2,310 ft. from E of Sec. 14, Blk. 30, T.&P. Sur. ..... T.D. 2,350 ft.; standardizing.

Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W, Sec. 14, Blk. 30, Twp. 1s, T.&P. Sur. . Spudded and S.D.

Harrison's No. 2 Denman, 1,650 ft. from S and 355 ft. from E Sec. 10, Blk. 30, Twp. 1s, T.&P. Sur. ..... Drlg. 710 ft.

Myers et al's No. 1 Denman, 2,305 ft. from S and 2,320 ft. from E Sec. 14, Blk. 30, Twp. 1s, T.&P. Sur. ..... Drlg. 745 ft.

Sinclair-Prairie Oil Co.'s No. 2 Dodge, 2,313 ft. from S and 300 ft. from W, Sec. 11, Blk. 30, Twp. 1s, T.&P. Sur. ..... Location.

Wallace et al's No. 1 Belt, 1,960 ft. from N, 2,640 ft. from W, Sec. 12, Blk. 30-1s, T.&P. Sur. ..... Drlg. 1,727 ft.

IRION COUNTY

Apollo Oil Co.'s No. 4 Nutt, 504 ft. from N and 1,562 ft. from W of Subd. No. 6, Gonzales County School Land ..... Cellar.

Davis et al's No. 1 Suggs, 1,560 ft. from S and 925 ft. from W, Sec. 3,081, Blk. 28, H.&T.C. Sur. ..... Drlg. 7,420 ft.

Stanolind Oil & Gas Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. ..... S.D. 7,420 ft.

JONES COUNTY

Johnson's No. 1 Huddleston, 165 ft. from S and W of N half of N half of Sec. 39, Blk. 18, T.&P. Sur. ..... Spudded and S.D.

J. M. Johnson's No. 1 Swann, 6,150 ft. from S and 1,550 ft. from E, I. Miley Sur. ..... Rigging up.

C. S. Spelling et al's No. 1 Lillie, 200 ft. from N and W Sec. 4, E. Miller Sur. No. 2 ..... Drlg. 260 ft.

Young et al's No. 1 Harrell, 150 ft. from S and E of N half of Sec. 8, O.A.L. Sur. ..... Location.

Abers et al's No. 1 Burton, 150 ft. from S and 175 ft. from E of 43.4-acre tract in G. Martinez Sur. ..... S.D. 1,005 ft.; temp. abnd.

Transcontinental Prod. Co.'s No. 1 Rust, 5,800 ft. N and 995 ft. W of SE cor. J. J. Hughes Sur. 556 ..... Cellar.

LOVING COUNTY

Eppenauer's No. 1 Freels, 1,263 ft. from NE, 410 ft. from NW, Sec. 92, Blk. 1, W.&N.W. Sur. ..... Rigging up.
Wm. Little's No. 1 Hugo Freels, 1,923 ft. from NE lines and 410 ft. from NW line of Sec. 92, W.&N.W. Sur., Blk. 1 ..... Drlg. 4,040 ft.
Martin's No. 1 Freels, 3,514 ft. from NE and 412 ft. from NW of Sec. 92, Blk. 1, W.&N.W. Sur. ..... Drlg. 1,198 ft.
Covey et al's No. 1 Wheat, 2,310 ft. from SW, 330 ft. from SE, Sec. 3, Blk. 2, W.&N.W. Sur. ..... S.D.; fishing 525 ft.
Eppenauer Drlg. Co.'s No. 1 Allen, 465 ft. from NE and SE, Sec. 4, Blk. 2, W.&N.W. Sur. ..... S.D. 200 ft.
Ervin & Mahres' No. 1 Thrope, 2,310 ft. from E and 330 ft. from S, Sec. 46, Blk. 53, T.&P. Sur. ..... S.D. 810 ft.
Falbre & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW, Sec. 79, Blk. 33, H.&T.C. Sur. ..... T.D. 4,275 ft.; cleaning out.
Lewis & Siagel's No. 1 Johnson, 330 ft. from N and 1,650 ft. from W, Sec. 6, Blk. 56, Twp. 1, T.&P. Sur. ..... Drlg. 1,400 ft.
Reagan & McElvain's No. 2 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. ..... S.D. 3,385 ft.
Miller et al's No. 1 Ferguson, 990 ft. from N and E of Sec. 44, Blk. 29 ..... Spudded.
Tennant et al's No. 1 Martin, 990 ft. from NW and SW, Sec. 66, Blk. 1, W.&N.W. Sur. ..... S.D. 4,380 ft.
Thomas' No. 1 Wheat, 2,310 ft. from NW, 990 ft. from NE, Sec. 83, Blk. 1, W.&N.W. Sur. ..... Drlg. 550 ft.

MENARD COUNTY

Priest's No. 1 Sorrel, 1,000 ft. from E and 200 ft. from S cor., Sec. 132, E.L.R.R. Sur. ..... S.D. 2,860 ft.

PECOS COUNTY

Anderson's No. 1 Lee Fever, 330 ft. from N and W of Sec. 78, Blk. 8, H.&G.N. Sur. ..... S.D. 2,037 ft.
Black et al's No. 1 Pecos Valley, 1,037 ft. from SE, 433 ft. from SW, Sec. 36, Blk. 3, H.&T.C. Sur. ..... Drlg. 1,240 ft.
Cardinal Oil Co.'s No. 1 J. H. Tippett ("J"), 1,980 ft. from the S line and 990 ft. from the W line of Sec. 2, D. F. Robertson Sur. ..... S.D. 675 ft.; plugged back to 600 ft.; bailing.
Corvette Oil Corp.'s No. 8 H. Monroe, 1,040 ft. from E line and 150 ft. from N line of Sec. 39, G.C.&S.F. Sur., Blk. 194 ..... Location.
Culberson Bros.' No. 4 Tippett, 150 ft. from N and 1,325 ft. from W of SE, Sec. 40, Blk. 194, G.C.&S.F. Sur. ..... S.D. 1,198 ft.
Hampton et al's No. 1 Byrne, 1,980 ft. from NW and 1,500 ft. from NE, Sec. 54, Blk. 10, H.&G.N. Sur. ..... T.D. 1,395 ft.; T.P. 1,356 ft.; cleaning out after shot.
Dittman's No. 1 Sanford, 330 ft. from NW and 1,650 ft. from NE of Sec. 55, Blk. 10, H.&G.N. Sur. ..... S.D. 1,454 ft.

PRESIDIO COUNTY

Sadler et al's No. 1 Bledsoe, 2,640 ft. from N and W Sec. 15, Blk. 354, G.C.&S.F. Sur. ..... Rigging up.

REAGAN COUNTY

Big Lake Oil Co.'s No. 6-C University, 1,370 ft. fro mS and 1,000 ft. from E, Sec. 12, Blk. 2 ..... Drlg. 7,635 ft.
Big Lake Oil Co.'s No. 7-C University, 1,570 ft. from W and 725 ft. from S, Sec. 25, Blk. 9 ..... Bldg. derrick.

REEVES COUNTY

Cunningham et al's No. 1 Wright, 1,330 ft. from S and W, Sec. 58, Cassel's Sur. ..... S.D. 75 ft.
F. McDorman et al's No. 1 Ray Roberts et al, 2,310 ft. from S and E lines of Sec. 22, Blk. 59, P.S.L. Sur. ..... S.D. 105 ft.
Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur. ..... S.D. 5,044 ft.

RUNNELS COUNTY

Blue Bonnett Oil Co.'s No. 1 McMillan, 1,368 ft. from N and 660 ft. from W, Sec. 22, N. Travis Sur. ..... S.D. 350 ft.
Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 519 ..... S.O. 3,417-20 ft.; S.D. 3,600 ft.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur. ..... Fishing 5,410 ft.
Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,302 ft. from E of Sec. 77, Blk. LL, T.C. Sur. ..... S.D. 5,580 ft.; fishing.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,570 ft. from W, G.H.&S.A. Sur. ..... S.D. 5,053 ft.

SURRY COUNTY

G. E. Dickman et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sub. ..... S.D. 5,050 ft.
W. S. Guthrie's No. 1 Snyder National Bank, 330 ft. from N and 2,310 ft. from E of Sec. 115, Blk. 97, H.&T.C. Sur. ..... Location.
Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W, Sec. 68, Blk. 3, H.&G.N. Sur. ..... Spudded and S.D.
Seifert & Dibble's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 153, Blk. 97, H.&T.C. Sur. ..... T.D. 4,515 ft.; fishing.

TAYLOR COUNTY

Eastland Oil Co.'s No. 1 King, 150 ft. from S and E, Lot 27, Willis Sur. ..... Drlg. 865 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T. Sur. ..... S.D. 2,269 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ..... S.D. 3,150 ft.; moved off tools.
Miller Bros.' No. 1 Allison & Burke, C NW Sec. 10, Blk. 176, T.&P. Sur. ..... S.D. 120 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S, Sec. 26, Blk. 161, G.C.&S.F. Sur. ..... S.D. 6,120 ft.
Jones et al's No. 1 Fankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur. ..... S.D. 2,545 ft.
Sides et al's No. 1 Phelps, 2,157 ft. from N and 2,482 ft. from W, Sec. 5, G. W. Hurley Sur. ..... S.D. 1,000 ft.

TOM GREEN COUNTY

Andrews' No. 1 Pugh, 250 ft. from N and 5,184 ft. from E, James Eldridge Sur. No. 73 ..... S.D. 453 ft.
Belding & Dutton's No. 1 Norsworthy, 1,640 ft. from S and 587 ft. from E of John McNeese Sur. ..... S.D. 760 ft.; S.O. and gas 725 ft.
Mintex Oil Co.'s No. 1 Campbell Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur. ..... S.D. 1,994 ft.
Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2 ..... S.D. 200 ft.

UPTON COUNTY

Farley et al's No. 1-B Lone, 2,310 ft. from N and E, Sec. 36, Blk. 1, M.-K.-T. Sur. ..... Drlg. 2,240 ft.

VAL VERDE COUNTY

Couch et al's No. 1 J. P. Yoas, 1,300 ft. from the N line and E line of Sec. 31, Blk. 1 ,I.&G.N. Sur. ..... S. D. 220 ft.
Independent Operators' No. 1 Whitehead, SE SE Sec. 10, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ..... S.D. 5,360 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev 2,130 ft. ..... S.D. 6,780 ft.

WARD COUNTY

Abell Bros.' No. 1 Sloan, 330 ft. from NW and NE, Sec. 24, Blk. 5, H.&T.C. Sur. ..... T.D. 2,490 ft.; cleaning out; flowed 110 bbls. first 24 hrs.
Abell Bros. et al's No. 1 Smith, 330 ft. from NE and NW, Sec. 4, Blk. 24, H.&T.C. Sur. ..... Rigging up.
Bradford & Bentley's No. 1 B. Carson, 1,650 ft. from the NE line and 990 ft. from the SE line of Sec. 26, H.&T.C. Sur., Blk. ..... T.D. 860 ft.; fishing.
Buck Sturm et al's No. 2 R. H. Gill, 2,310 ft. from SW line and 330 ft. from SE line, Sec. 25, Blk. B-29, P.S.L. Sur. ..... T.P. 2,473 ft.; T.D. 2,497 ft.; makes small flow every 3 days.
Eastland Oil Co.'s No. 1 Weiss, 2,365 ft. from SE and SW, Sec. 4, Blk. 24, H.&T.C. Sur. ..... Drlg. 460 ft.
Sppenauer's No. 1 Purcell, 365 ft. from SW and 1,650 ft. from SE of Sec. 17, Blk. 14, H.&T.C. Sur. ..... T.D. 2,740 ft.; to shoot.
Eppenauer Drlg. Co.'s No. 1 Townsend-Moore, 990 ft. from SE and 330 ft. from SW, Sec. 17, Blk. 34, H.&T.C. Sur. ..... Spudded and S.D.
H. V. Greer's No. 1 Carr, 150 ft. from NW and 510 ft. from SW, Sec. 12, Blk. 5, H.&T.C. Sur. ..... S.D. 2,065 ft.
Gulf Prod. Co.'s No. 10 Hutchings, 330 ft. from N and W of 5,370 acres, Sec. 5, Blk. F, G.M.M.B.&A. Sur. ..... T.D. 2,765 ft.; connecting.
Gulf Prod. Co.'s No. 21 O'Brien, 2,557 ft. from N, 330 ft. from E of Sec. 16, Blk. F ..... S.D. 1,280 ft.
Massie et al's No. 1 Stewart, 330 ft. from SW and SE, Sec. 12, Blk. 14, H.&T.C. Cur. ..... S.D. 1,070 ft.
Moran & Burkhart's No. 2 J. T. Sweatt et al, 3,810 ft. from SW, Sec. 1, J. Howe Sur. ..... S.D. 821 ft.
Moran & Miles' No. 1 Boogher, 3,603 ft. from NE and 1,303 ft. from SE, Sec. 11, Blk. 5, H.&T.C. Sur. ..... S.D. 2,040 ft.
R. F. Owen's No. 1 Lee, 1,344 ft. from NW and 4,532 ft. from SW, Sec. 1, J. Howe Sur. ..... Fishing 940 ft.
Plains Prod. Co.' and Simms Oil Co.'s No. 1 Benton Land Co., 440 ft. from the SE and 440 ft. from SW lines of Sec. 26, W.&N.W.R.R. Sur., Blk. 1 ..... Drlg. 875 ft.
Rector Oil Co.'s No. 1 Smith, 1,320 ft. from N and E, Sec. 22, Blk. A, G.M.M.B.&A. Sur. ..... S.D. 3,602 ft.
Richardson et al's No. 8 O'Brien, 1,372 ft. from N, 330 ft. from W, Sec. 5, Blk. F ..... Drlg. 1,200 ft.
Richardson et al's No. 7 O'Brien, 1,500 ft. from N and 330 ft. from W Sec. 5, Blk. F ..... Drlg. 2,510 ft.
Rixford et al's No. 1 Green, 330 ft. from NW and SW Sec. 4, Blk. 34, H.&T.C. Sur. ..... Drlg. 1,015 ft.
Stanolind Oil & Gas Co.'s No. 1 Cannon, 3,300 ft. from SE and 1,649 ft. from NE, Sec. 29, Blk. B-29 ..... S.D. 2,686 ft.; shot with no results; may plug.
Sturm-Simms Oil & Gas Co.'s No. 2 Jones, 1,650 ft. from NE and 330 ft. from SE, Sec. 25, Blk. B-29, P.S.L. ..... Location.
T. P. Coal & Oil Co.'s No. 2 James, 330 ft. from NW and NE Sec. 5, Blk. 34 ..... Drlg. 1,645 ft.
White et al's No. 1 Burtner, 150 ft. from NE and 515 ft. from SE of Sec. 8, Blk. 32, H.&T.C. Sur. ..... S.D. 755 ft.

WINKLER COUNTY

Adams et al's No. 1 Scarborough, 660 ft. from N and E Sec. 1, Blk. 77, P.S.L. ..... Rigging up.
Liner Drlg. Co.'s No. 1 Campbell, 350 ft. from N and E cor., Sec. 2, Blk. B-5 ..... S.D. 4,640 ft.

EAST AND EAST CENTRAL TEXAS WILDCATS

(Continued from Page 53)

DALLAS COUNTY

Long Creek Dev. Co.'s No. 1 T. J. Lupton, center of 160-ac. tract, 3½ miles N of Mesquite, J. Johnson Sur. ..... Rig up.
Paris' No. 2 Wilkinson, 2,787 ft. from NW and 3,241 ft. from SW of John P. Anderson Sur. ..... T.D. 1,230 ft.; S.D.

DELTA COUNTY

Joiner et al's No. 1 W. H. Martin, 330 ft. from N line and midway between E and W lines of survey and lease on 2,743-ac. tract, D. Parker Sur. ..... Location.
Joiner et al's No. 1 Blackwell, 800 ft. S and 150 ft. from E lines of 275-ac. tract, Dunnetelle Sur. ..... Drlg. 670 ft.
Worthington et al's No. 1 Pejernett, 776 ft. from S and 150 ft. from W in E. Chick Sur., 1½ miles W of Horton ..... S.D. 3,315 ft.

ELLIS COUNTY

Community's No. 1 Reeves ..... Waiting on cmt. to set 100 ft.
E. M. Rogers' No. 1 John Lee Winn, 1,650 ft. from E and 150 ft. from S of Orland, Orlo Wheeler Sur. ..... S.D. 1,435 ft.

FRANKLIN COUNTY

Tom Harper's No. 1 fee, 150 ft. from N line and 200 ft. from E line of 116-ac. tr., W. M. Dawson Sur. .. Drlg. 2,150 ft.

GREGG COUNTY

Adams and Lyles' No. 1 J. H. Sheppard, 500 ft. S and 400 ft. E of SW cor. of Galvey 45-ac. lease, T. Allen Sur. ..... Derrick.
Adams and Lyles' No. 1 L. Howard, E offset to Sun Oil Co.'s No. 2 Smith, M. Scott Sur. ..... Derrick.
Arkansas Drilling Co.'s No. 1 Adkins heirs, 500 ft. from S line and center of E and W lines of Lot 1, D. Dainwood Sur. ..... Rig up.
Arkansas Fuel Oil Co.'s No. 1 Taylor Lee, 330 ft. out of NW cor. of 52.1-ac. lease, William Robinson Sur. ..... Rig up.
Atlantic Oil Producing Co.'s No. 1 T. B. Harris, 330 ft. from most easterly E line and center of N and S lines of lease, W. H. Castleberry Sur. ..... Drlg. 2,488 ft.
Atlantic Oil Producing Co.'s No. 1 H. Pritchard, 330 ft. from N and E lines of lease, F. W. Johnson Sur. ..... Derrick.
M. T. Beeler's No. 1 Finley and Thomas, 150 ft. from N and 150 ft. from W of 10-ac. lease, C. H. Alexander Sur. ..... Waiting on cmt. to set 100 ft.
Big Indian Oil Co.'s No. 1 W. R. Nicholson, 330 ft. from S line and 4,783 ft. from E line of tract, M. Mann Sur. ..... Waiting on cmt. to set 3,631 ft.
Will Brown's No. 1 E. Choice, 400 ft. due east of Collins' No. 1 H. T. Elder ..... Derrick.
Carroll and Baine's No. 1 Griffin, SW offset to Magnolia's No. 7 Griffin, M. V. Winkle Sur. ..... Drlg. 960 ft.
Continental Oil Co.'s No. 1 A. A. King, 330 ft. from N line and center of E and W lines of lease, M. Tennison Sur. ..... Derrick.
O. R. Cooper's No. 1 J. C. Clayborn, 536 ft. S and 753 ft. W of most easterly NE cor. of Gulf's Clayborn lease, I. Beaty Sur. ..... Drlg. 2,760 ft.
Danciger Oil & Refining Co.'s No. 1 Mattox, 330 ft. from N and W lines of 55.4-ac. lease, D. Sanches Sur. ..... Rig up.
Dodd and Markey's No. 1 J. F. Holt, 615 ft. E and 707 ft. N of SW cor. of 200-ac. tract, H. Edwards Sur. ..... Derrick.
Harry M. Edwards' No. 1 Starr Estate, 200 ft. from N line and center of E and W lines of 12.5-ac. lease, D. Sanches Sur. ..... Running csg. 3,539 ft.
Empire Gas & Fuel Oil Co.'s No. 1 E. L. Walker, 400 ft. from S line and 220 ft. from E line of lease, John Tate Sur. ..... Location.
Empire Gas & Fuel Co.'s No. 1 H. E. Thomas, 330 ft. from N line and E lines of lease, J. M. Morris Sur. ..... Location.
Eslick and Bazzell's No. 1 J. H. Thomas, 225 ft. from N and S lines and 290 ft. from W line of N 15 acres of 65-ac. tract, H. F. Rogers Sur. ..... Derrick.
Mike Glasscock et al's No. 1 Bacle, 409 ft. from E line and center of N and S lines of 5.97-ac. lease, G. W. Hooper Sur. ..... Drlg. 3,200 ft.
Lewis Godlin's No. 1 E. L. Walker, 330 ft. N of road, 330 ft. from E line of 80.2-ac. tract, M. Dillard Sur. ..... Derrick.
S. A. Guiberson et al's No. 1 J. M. Christian, 150 ft. from W line and center N and S lines of 8.77-ac. lease, G. W. Hooper Sur. ..... Drlg. 2,800 ft.
Hastings et al's No. 1 Wallace, due SE offset to Victory Smith's No. 1 Knowles, M. Tennison Sur. ..... Waiting on cmt. to set 3,480 ft.
F. C. Jones et al's No. 1 J. M. Christian, center of 3.75-ac. tract, G. W. Hooper Sur. ..... Set surface csg.

K. B. Oil Co.'s No. 1 Dickson, 150 ft. from S and 150 ft. from W of 5-ac. lease, Mary Van Winkle Sur.....S.D. 700 ft.
Larry and Hall's No. 1 J. H. Alexander, center of W 3 acres of E 5 acres of N 10 acres of 50-ac. tract, D. Sanches Sur. .....Rig up.
Lovett-Norr et al's No. 1 Rufus Smith, 1,100 ft. from N line and 750 ft. from W line of lease, R. Slaughter Sur. .....Rig up.
C. L. Mahaney's No. 1 Mt. Culver Church, center of 4-ac. tract, J. Hay Sur. .....Rig up.
McLemore et al's No. 1 Adkins, 330 ft. N and 150 ft. W of SW cor. of Gulf Lingley lease, D. Dainwood Sur. .....Swabbing 700 ft.
Miller and Lacy's No. 1 W. R. Nicholson, 330 ft. from S line and center of E and W lines of 39-ac. lease, M. Mann Sur. .....Location.
Newman et al's No. 1 A. V. Bacle, 426 ft. S and 250 ft. W of NW cor. of Barnsdall's McGrede lease, G. W. Hooper Sur. .....Rig up.
J. D. Patty, et al's No. 1 J. C. McCormick, 207 ft. SE at right angles to Gladewater-Tyler road and 540 ft. SW of Abernathy and Kirkpatrick's No. 1 Gregston, M. Dillard Sur. .....T.D. 100 ft.
R. A. Payne et al's No. 1 R. M. Woods, 20 ft. from S line and 31 ft. from W line of 2.13-ac. lease, H. R. Holit Sur. .....Derrick.
Pennsylvania Oil & Refining Co.'s No. 1 Bonner, 693 ft. W and 330 ft. S of most easterly NE cor. of survey, James McRae Sur. .....Location.
Pruitt and Standberry's No. 1 M. B. Hughey, Blk. No. 160, Kilgore Townsite, Mary Van Winkle Sur. .....Derrick.
Reeves et al's No. 1 W. L. Hestland, center of five-eighths-acre tract, midway from Lampton Church and Sarson's No. 2 Hall, D. Sanches Sur. .....Derrick.
Ross et al's No. 1, located on Findley & Thomas 50-ac. tract, 150 ft. from S line and 6.66-ac. lease, C. H. Alexander Sur. .....Derrick.
Frank Russell's No. 1 Crimm, center of one-half-acre tract, M. V. Winkle Sur. .....Derrick.
Shell Petroleum Corp.'s No. 1 H. T. Elder & Sons, 330 ft. from W line and center of N and S lines of lease, M. V. Winkle Sur. .....Moving in.
Shell Pet. Corp.'s No. 1 S. C. Fishborn, 330 ft. from N and E lines of 100-ac. lease, F. W. Johnson Sur.....Location.
Showers and Moncrief's No. 1 J. M. Christian, 177 ft. from N and S lines and 265 ft. from E and W lines of 4.33-ac. lease, G. W. Hooper Sur. .....Drlg. 2,745 ft.
Silver Star Oil Co.'s No. 1 Finley and Thomas, 150 ft. from SE line and center of N and S lines of 3-ac. lease, C. H. Alexander Sur. .....Drlg. 1,550 ft.
Silver Star Oil Co.'s No. 1 Pine Hill School, center of S 1-ac. and 2-ac. tract, H. Hathaway Sur. .....Waiting on cmt. to set 3,552 ft.
Simms Oil Co.'s No. 1 W. R. Nicholson, 330 ft. from N line and 284 ft. from E line of 801-ac. lease, M. Mann Sur. .....Bldg. derrick.
V. C. Smith's No. 1 M. B. Hughey, center of Blk. No. 123, Mary Van Winkle Sur. .....Set csg.; T.D. 3,581 ft.
Victor C. Smith's No. 1 Knowles, center of Blk. 134, Mary Van Winkle Sur. .....Derrick.
Solar Exploration Co.'s No. 1 J. S. and F. Elder, 840 ft. E of Magnolia E line and 330 ft. from S line of Solar lease, M. V. Winkle Sur. .....Drlg. 2,300 ft.
Stroube and Stroube's No. 1 Dollie Key, 250 ft. from S line and center of E and W lines of lease, J. Ruddle Sur. in C. H. Alexander Sur. .....Drlg. 680 ft.
Stroube and Stroube's No. 1 Finley and Thomas, 150 ft. from N line and 330 ft. from W line of 10-ac. lease, C. H. Alexander Sur. .....Location.
Sun Oil Co.'s No. 1 M. Strong, 200 ft. from S line and 350 ft. from W line of lease, John Blair Sur. .....Derrick.
Travis and Crosby's No. 1 K. P. Lodge Lot, 210 ft. S of Gulf's No. 6 Alexandria and 40 ft. from center line of road, M. V. Winkle Sur. .....Rig up.
T. J. Tucker's No. 1 Mary Rufus, center of one-half-acre tract, Mary Van Winkle Sur. .....Drlg. 3,529 ft.
Turnbow et al's No. 1 Rodger Lacy, center of E half of Blk. No. 1, M. V. Winkle Sur. .....Rig up.
Valentine Oil Co.'s No. 1 Goyne-Hughey, 6,100 ft. from S and 6,800 ft. from W of survey, Mary Van Winkle Sur. .....Rig up.
Ward Oil Co.'s No. 1 Nicholson, 353 ft. from S line and 3,350 ft. from E line of lease, M. Mann Sur.....Derrick.
H. E. Wrenn's No. 1 A. A. King, 150 ft. from S and E lines of 79-ac. lease, W. P. Chisum Sur. .....Set surface csg.
F. P. Wolverton's No. 1 Claude Lee, 40 ft. from S line and 103 ft. from W line of 1-ac. tract, L. J. Rigsby Sur. .....Drlg. 3,040 ft.

HILL COUNTY

Sherman-Houseman's No. 1 J. F. Griffith, in Samuel Waddell Sur. .....S.D. 3,256 ft.

HOPKINS COUNTY

Roark et al's No. 1 Taylor, 220 ft. from N and W lines of 80-ac. tract in the John Polk Sur. .....S.D. 540 ft.

HOUSTON COUNTY

Ramsland and Ramsland's No. 1 Pennington, 750 varas W of E line and 500 varas from S line of survey on 186-ac. tract, Ramond LaGarza Sur. .....S.D. 2,660 ft.
C. T. McManus' No. 1 Harron, 300 ft. out of NE cor. of 327-ac. tract, J. P. Procella Sur. .....Spudded and S.D. 37 ft.

HUNT COUNTY

Branson et al's No. 1 Gray .....Location.
Russell et al's No. 1 Brooks and Quattlebaum .....S.D. 1,455 ft.

KAUFMAN COUNTY

Standy Darnell et al's No. 1 Sally Pannill .....T.D. 1,628 ft.

LAMAR COUNTY

G. W. Davy et al's No. 1 McGustion, 450 ft. from S line, 450 ft. from W line of farm and survey, Galet Wood Sur. .....S.D. 2,880 ft.
Doyle and Jondeau's No. 1 Martin, 990 ft. from N line and 330 ft. from E line of tract, Joseph Deck Sur. .....S.D. 1,070 ft.
Doyle and Jondeau's No. 1 Horn, 226 ft. from S line and 608 ft. from E line of lease, R. P. Mayor Sur. .....T.D. 2,310 ft.

LEON COUNTY

Saiser Drlg. Co.'s No. 1 Dr. J. M. Blair, 1,010 ft. from N line, 1,986 ft. from W line, Sec. 19, Blk. E, Lucia Hibbard Sur. .....Derrick on ground.

MORRIS COUNTY

Leonard's (Tucker-Fullwood) No. 1 P. M. Staggers, 450 ft. from N line and 150 ft. from E line of 65.5-ac. tract, J. D. Nelson Sur. .....S.D. 3,535 ft.

NACOGDOCHES COUNTY

Adams et al's No. 1 Fuller Brothers, located in a 269-ac. tract, Jose Flores Sur. .....Location.
Taylor-Vaughn's No. 1 Dixon Greer, 160 ft. from W and 460 ft. from N lines of 60-ac. tract in the M. G. Herrera Sur. .....S.D. 265 ft.

POLK COUNTY

Sunshine Oil Co.'s No. 1 Brawley, 150 ft. from S line and 250 ft. from E line of W 100 acres of lease, F. Johnson Sur. .....Derrick.

RAINS COUNTY

C. H. Bayliss' No. 1 Ownby, 150 ft. N and 1,100 ft. from E of most easterly SE cor. of survey, Alexander Sur. .....S.D. 4,036 ft.; to drill deeper.
Greer et al's No. 1 Roy Harper, 150 ft. from S line and E line of tract, 4 miles N of Ginger, David Rose Sur. .....Abnd. 4,402 ft.

RED RIVER COUNTY

Hoffman and Henson's No. 1 H. H. Lennox, 2,790 ft. W and 300 ft. S of most easterly NE cor. of survey, J. E. Edmondson Sur. .....S.D. 60 ft.
Concord Oil Co.'s No. 1 J. R. Dellahunty, 600 ft. from N of Isaac Moore Sur. and 200 ft. E of E line of Robert Glass Sur. .....S.D. 2,546 ft. (corrected).

ROCKWALL COUNTY

Bucanner Oil Co.'s No. 1 H. L. Lofland, center of 69-ac. tract in W. M. Bird Sur. .....Set 10-in. csg. 120 ft.

RUSK COUNTY

Anderson et al's No. 1 E. B. Alford, center of Blk. No. 3, I. Parker Sur. .....Drlg. 2,762 ft.
Beard and Hammon's No. 1 H. Alexander, 330 ft. from W line and midway between N and S lines of 25-ac. lease, T. Grace Sur. .....Drlg. 2,811 ft.
J. Earl Brown's No. 1 Arnold, 990 ft. from E and 330 ft. from S line of Arnold 128-ac. farm, William Christian Sur. .....Top chalk 3,530 ft.; start coring at 3,650 ft.
Butler and Calhoun's No. 1 C. C. Lowe, 225 ft. from N line and 200 ft. from E line of 85-ac. lease, W. G. Tutt Sur. .....Derrick.
Byrd-Frost's No. 1 Buckner, J. E. Peyton Sur. .....T.D. 4,077 ft.
Combine Oil Interest's No. 1 G. W. Eaton, E offset to Gulf's No. 1-A Rayford, F. Cordova Sur. .....Drlg. 3,748 ft.
O. R. Cooper's No. 1 E. E. Moores, center of 1½-ac. lease, J. B. De Cadena Sur. .....Drlg. 3,015 ft.
Everett Drilling Co.'s No. 1 Colvert School, center of 3-ac. tract, D. Clark Sur. .....Drlg. 984 ft.
Everts Drilling Co.'s No. 1 Joe Lee, 330 ft. from N line and 400 ft. N and 330 ft. S of SW cor. of J. Crouch Sur. .....Drlg. 310 ft.
Fagin and Salmon's No. 1 Scroggins, 330 ft. from N and W lines of lease, E. Collard Sur. .....Rig up.
R. W. Fair et al's No. 1 Deason, 250 ft. from N line and 200 ft. from W line of 200-ac. lease, Juan Ximenes Sur. .....Rig up.
E. P. Florey's No. 1 E. B. Alford, center of 3-ac. lease, Isaac Parker Sur. .....Derrick.
Gant-Gerwin and Wegener's No. 1 L. A. Till, 330 ft. from N line and 464 ft. from W and E line of 26-ac. lease and tract, M. V. Pena Sur. .....Drlg. 3,658 ft.
Hale and Hatchfield's No. 1 C. J. Goforth, 625 ft. from S line and 450 ft. from W line of 13.4-ac. tract, M. J. Pru Sur. .....Rig up and S.D.
Harris and Russel's No. 1 T. W. Harris, 330 ft. from S line and 660 ft. from W line of most southerly SW cor. of 160-ac. tract, 3 miles SW of Henderson, W. G. Davis Sur. .....Derrick.
Hathaway et al's No. 1 Gray, J. M. McLain Sur. .....Drill stem stuck 3,150-80 ft.
Heiden-Rodgerson et al's No. 1 Barton and Birdwell, N offset to Reisinger et al's No. 1 Barton, W. G. Tutt Sur. .....Drlg. 3,727 ft.
Holland et al's No. 1 S. E. Brox, 330 ft. from N line and 250 ft. from W line of 20-ac. lease, Thomas Grey Sur. .....Derrick.
W. F. Hollifield's No. 1 Wylie, 160 ft. from W and E line and 330 ft. from S line of 10-ac. lease, Juan Ximenes Sur. .....Drlg. 900 ft.
Hudspeth's No. 1 E. B. Alford, center of Lot No. 35, T. J. Moore Sur. .....Spudding.
LaSalle-Davenport and Bledsoe's No. 1 Church, 175 ft. S and 175 ft. E of SE cor. of Sun-Schuler joint lease, J. B. DeCadena Sur. .....Rig up.
Mack Oil Corp.'s No. 1 S. H. Arnold, 300 ft. from S line and 1,200 ft. from E line of 128-ac. tract, W. G. Christian Sur. .....Drlg. 3,150 ft.
Magnolia Petroleum Co.'s No. 1 W. B. Key, 330 ft. from S line and 330 ft. from E line of 56.41-ac. lease, John Lindley Sur. .....T.D. 2,786 ft.; top sand 2,785.
McPhail and Kimbrough's No. 1 E. A. Thrash, 150 ft. from N and W line of 4-ac. lease, Juan Ximenes Sur. .....Drlg. 3,200 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 D. Ledbetter, 425 ft. from S line and 1,165 ft. from E line of 197-ac. lease, W. J. Roan Sur. .....Waiting on cmt. to set 3,465 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 R. M. Weaver, 330 ft. from N line and 412 ft. from W and E lines of 40-ac. tract, W. J. Roan Sur. .....Derrick.
Mid-Kansas Oil & Gas Co.'s No. 1 Henry Clay estate, 370 ft. from S line and 330 ft. from W line of 43-ac. tract, M. V. Pena Sur. .....Derrick material.
Mullins and Strickland's No. 1 Brewer Cemetery, 330 ft. from N and 51 ft. E of NW cor. of Stanolind McCord 30-ac. lease, M. V. Pena Sur. .....Tested six joints of mud in 20 minutes.
Pace Petroleum Co.'s No. 1 Wells, W offset to East Texas, W. P. Chisum Sur. .....Derrick.
Primrose Petroleum Corp.'s No. 1 W. P. Brett, center of N and S lines of lease, F. Cordova Sur. .....Moving in rig.
D. B. Reed and Standard Supply Co.'s No. 1 Church, 121 ft. NE along SE line and 86 ft. NW at right angles, J. B. De Cadena Sur. .....Derrick.
Ross Seward's No. 1 Burton, J. J. Y'Barbo Sur. .....S.D. 3,077 ft.
Sabins et al's No. 1 J. R. Irion, 330 ft. from S and E line of 2-ac. tract, John Womack Sur. .....Rig up.
H. G. Sampson's No. 1 Goforth, 200 ft. NE along road from most northerly NE cor. of Cloud's lease and 50 ft. S at right angles .....Drlg. 3,600 ft.
R. E. L. Silvey's No. 1 P. G. Warren, 155 ft. from S line and 96 ft. from E line of 44-ac. tract, John Womack Sur. .....Drlg. 3,125 ft.
Jay Simmon's No. 1 D. C. Joyner, 2,050 ft. from S line and 300 ft. from W line of 74.11-ac. tract, F. Cordova Sur. .....Derrick.
Sinclair Oil & Gas Co.'s No. 1 W. G. Grissom, 330 ft. from N line and 330 ft. from E line of 50-ac. lease, W. D. Porter Sur. .....Testing 3,657 ft.
Spansco Oil Co.'s No. 1 E. B. Alford, center of Blk. No. 43, T. J. Moore Sur. .....Drlg. 265 ft.
J. E. Stone Lumber Co. and Imperator Oil Co.'s No. 1 School Lot, center of School Lot, J. B. Cadena Sur. .....T. D. 3,649 ft.
Taubert and McKee's No. 1 Tolliver, 150 ft. from W line and E offset to Ward's No. 5 Giles and center of N and S lines of lease, Juan Ximenes Sur. .....Derrick.
Tex Jersey Oil Co.'s No. 1 Cora Hannah, center of 6-ac. lease, J. B. De Cadena Sur. .....Derrick.
Trico Oil Co.'s No. 1 Pinkston, skidded derrick 60 ft. E of old Phillips junked hole, J. B. De Cadena Sur. .....Waiting on cmt. to set 3,609 ft.
Weaver-Crim's No. 1 F. Bean, 175 ft. from NW line and 212 ft. from S line of 16-ac. lease, Mary Cogswell Sur. .....Rig up.

JOINER POOL—RUSK COUNTY

Paulett et al's No. 1 Ed Sparks, 350 ft. from E, 150 ft. from S of survey, L. C. Riggs Sur. ..... S.D. 1,465 ft.

SAN AUGUSTINE COUNTY

A. H. Jones and Tennant's No. 1 A. P. Davis .....Fishing 3,672 ft.

SMITH COUNTY

Droppleman and Bunte's No. 1 Atkinson, 1,000 ft. N of old location SE of Starrville .....Drlg. 2,850 ft.
Hawkins and Sutton's No. 1 Church, 345 ft. from S line and center of E and W lines of 3.73-ac. lease, James Jordan Sur. .....Drlg. 3,130 ft.
J. E. Lucas' No. 1 Henry Jackson, 150 ft. from N and E lines of 25-ac. tract, James Jordan Sur. ....Rig up and S.D.

Lucas & Hobbe's No. 1 L. S. Sartin, 214 ft. from S line and 330 ft. from E line of 10-ac. lease and 76-ac. tract, James Jordan Sur. ..... Plugged back to 3,796 ft.; preparing to swab.

Quintella McCullough's No. 1 Jessie Cole, 200 ft. from S line and center of E and W lines of 6-ac. lease, J. Jordan Sur. ..... Rig up.

Weaver-Crim Corp.'s No. 1 Stone and Lee, 330 ft. from E line and 530 ft. S of Sessions' No. 1 Attaway, D. Shaw Sur. ..... T.D. 3,020 ft.

Sinclair Oil & Gas Co.'s No. 1 E. E. Moore, 330 ft. from S and E lines of 97-ac. lease, Juan Vargus Sur. ..... Waiting on cmt. to set 3,729 ft.

Sun Oil Co.'s No. 1 St. Clair, 330 ft. from N and E lines of 106-ac. tract, Juan Vargus Sur. ..... Fishing 2,825 ft.

Tulsa Oil Co.'s No. 1 M. L. Thompson, 330 ft. from N and W lines of 59-ac. lease, Isaac Moore Sur. ..... Drlg. 2,850 ft.

Zion Oil Co.'s No. 1 Sartin, 665 ft. N and 328 ft. W of SW cor. of Mayfield 94-ac. tract, James Jordan Sur. ..... T.D. 3,801 ft.

TITUS COUNTY

Perry V. Cook's No. 1 M. C. Rogers, center of SW of Moore Sur. ..... S.D. 4,100 ft.

UPSHUR COUNTY

L. G. Bradstreet et al's No. 1 O. M. Victory, 330 ft. from N and E lines of 10-ac. lease, E. A. J. Evans Sur. ..... Location.

Flanigan Production Co.'s No. 1 Whitehurst, 330 ft. from N and E lines of N 30 acres of W 40 acres of 100-ac. tract, McKinney and Williams Sur. ..... Waiting on cmt. to set 83 ft.

Pat Hudson et al's No. 1 D. F. Smith, 330 ft. out of SE cor. of W 100 acres of the N 200 acres of the 272-ac. lease, 3 miles E and 1¼ miles N of Cranfill & Reynolds' No. 1 Rash, John Denson Sur. ..... Abnd. 3,710 ft.

Lester et al's No. 1 J. Jones, 304 ft. from most easterly E line and 350 ft. S of roads, William King Sur. .... Drlg. 3,500 ft.

J. C. McFarland et al's No. 1 Willie Starr, center of S 40 acres of Starr 96-ac. tract, Charles Cooper Sur. ..... S.D. 3,523 ft.

A. A. Trammell et al's No. 1 E. H. Hampton, 330 ft. from S and E line of S 60 acres of E 150 acres of 192-ac tract, William King Sur. ..... Drlg. 3,660 ft.

L. E. Trout et al's No. 1 O. M. Victory, 330 ft. from S and E lines of 60-ac. lease, E. A. J. Evans Sur.... Derrick.

Webster's No. 1 R. H. McClelland, 1,956 ft. E and 385 ft. S of NW cor. of 751-ac. tract, M. P. Del Torres Sur. ..... Derrick.

VAN ZANDT COUNTY

Barton et al's No. 1 C. L. Hubbard, 600 ft. out of NE cor. of Hubbard 225-ac. tract, 3½ miles S of Canton, M. J. DeCadena Sur. ..... S.D. 2,405 ft.

Kelly O. & G. Co.'s No. 1 Lemsford, center of Lemsford tract, John Conner Sur. ..... S.D. 2,300 ft.

Pure Oil Co.'s No. 1 D. F. Cade, 150 ft. N of S line and 150 ft. W of E line of lease, Nacogdoches County School Land ..... Location.

Pure Oil Co.'s No. 1 N. E. Clark, 150 ft. S of extreme N line and midway between E and W lines, John Walling Sur. ..... Location.

Pure Oil Co.'s No. 2 P. E. Neill, 329 ft. N of S line and 59 ft. E of W line of lease, John Walling Sur. ..... Pulling on liner 2,932 ft.

Pure Oil Co.'s No. 2 Mrs. C. White, 250 ft. S of N line and 690 ft. E of W line of lease, John Walling Sur. ..... Location.

Pure Oil Co.'s No. 2 Mrs. C. White, 250 ft. E of W line, 250 ft. S of N line, John Walling Sur. ..... Derrick.

Pure Oil Co.'s No. 3 J. F. Crim, 200 ft. W of E line and 250 ft. S of N line of lease, John Walling Sur. ..... Location.

Pure Oil Co.'s No. 4 D. R. Howell, 667 ft. S of N line and 650 ft. E of W lines of lease, H. V. Moore Sur. ..... Location.

Pure Oil Co.'s No. 5 L. M. Brawner, 200 ft. S of N line and 1,572 ft. W of E line of lease, John Walling Sur. ..... Location.

Pure Oil Co.'s No. 5 W. H. Cooke, 350 ft. SW of well No. 2 and 140 ft. N of S line of lease, Mund Gross Sur. ..... Location.

Pure Oil Co.'s No. 9 A. R. Tunnell, 644 ft. N of S line and 250 ft. W of E line of lease, John Walling Sur. ..... Drlg. 2,472 ft.

Van Oil Association's No 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. ..... T.D. 2,850 ft.

WOOD COUNTY

Talko Oil Co.'s No. 1 G. T. Ross, B. L. Smith Sur. ..... S.D. 2,760 ft.

Wood County Dev. Co.'s No. 1 Davis, approximately 180 ft. from S line of 160-ac. tract and 2½ miles S of Kantes in Sarah McDonald Sur. ..... Moving in rig.

EAST TEXAS FIELDS

(Continued from Page 53)

quarters-inch tubing choke, total depth 3,616 feet. Magnolia Petroleum Co.'s No. 3 Bradbury, top sand 3,859 feet, initial production 42 bbls. in five minutes through three-quarters-inch tubing choke, and 3-inch flow line, total depth 3,671 feet. Shell Petroleum Corp.'s No. 3 T. H. Gill, top sand 3,652 feet, initial production 15 bbls. in one-quarter hour through tapered tubing, total depth 3,658 feet. Jackson's No. 1 W. G. Williamson, top sand 3,702 feet, initial production 71 bbls. per day pinched through tubing, total depth 3,706 feet. Tidal Oil Co.'s No. 7 W. P. Moore, top sand 3,680 feet, initial production 32 bbls. in one-quarter hour through open 2-inch tubing, total depth 3,687 feet. Ward Oil Co.'s No. 4 J. R. Bealle, top sand 3,689 feet, initial production 71 bbls. per day pinched, total depth 3,693 feet.

South Rusk County

Jim Cloud's No. 3 W. F. Neal, top sand 3,750 feet, initial production 25 bbls. in 10 minutes through open tubing, total depth 3,755 feet. R. W. Fair and C. L. Thompson's No. 1 W. E. Wylie, top sand 3,583 feet, initial production 40 bbls. per hour through open tubing, total depth 3,650 feet. Gulf Production Co.'s No. 2-D Mayfield Co., top sand 3,634 feet, initial production 75 bbls. per hour through three-quarters-inch tubing choke, total depth 3,644 feet. Haynes Drilling Co.'s No. 5 B. T. and M. Lee, top sand 3,611 feet, initial production 150 bbls. per hour through open tubing, total depth 3,646 feet.

Humble Oil & Refining Co.'s No. 3 Sol Dennis, top sand 3,711 feet, initial production 41 bbls. in one-half hour through three-quarters-inch tubing choke, total depth 3,755 feet; No. 4-B R. E. L. Silvey, top sand 3,643 feet, initial production 43 bbls. in one-half hour through three-quarters-inch tubing choke, total depth 3,751 feet; No. 8 J. W. Turner, top sand 3,710 feet, initial production 46 bbls. in one-half hour through three-quarters-inch tubing choke, total depth 3,760 feet. H. L. Hunt's No. 3 W. P. Moore, top sand 3,623 feet, initial production 50 bbls. in one-quarter hour through open tubing, total depth 3,640 feet. McLester Drilling Co.'s No. 1 J. Johnson, top sand 3,784 feet, initial production 30 bbls. in one-quarter hour through open tubing, total depth 3,786 feet. Mid-Kansas Oil & Gas Co.'s No. 5 J. F. Mason, top sand 3,655 feet, initial production 160 bbls. per hour through open tubing based on one-quarter-hour gauge, total depth 3,690 feet. Mills Bennett's No. 3 L. J. Pinkston, top sand 3,591 feet, initial production 80 bbls. per hour through open tubing, total depth 3,643 feet.

George L. Pace's No. 1 E. B. Alford, top sand 3,650 feet, initial production 50 bbls. per hour through open tubing, total depth 3,604 feet. Pansy Oil Co.'s No. 1 E. B. Alford, top sand 3,556 feet, initial production 75 bbls. per hour through 2-inch tubing choke, total depth 3,635 feet. W. C. Snyder and others' No. 1 Stewart, top sand 3,710 feet, initial production 25 bbls. in one-quarter hour through open tubing, total depth 3,734 feet. Spansco Oil Co.'s No. 1 J. R. Alford, top sand 3,570 feet, initial production 75 bbls. per hour through open tubing, total depth 3,612 feet. Staley-Wynne Corp.'s No. 1 School Lot, top sand 3,626 feet, initial production 67 bbls. per hour through open tubing, total depth 3,676 feet. The Texas Company's No. 2 Price, top sand 3,572 feet, initial production 100 bbls. per hour through three-quarters-inch tubing choke, total depth 3,608 feet. Venable and McClanahan's No. 7 J. A. Bridwell, top sand 3,603 feet, initial production 72 bbls. in 25 minutes through open tubing, total depth 3,633 feet.

San Augustine County

Smith and Baker's No. 1 Pickering Lumber Co., location abandoned.

Smith County

Acme Oil Co.'s No. 1 Horton, dry and abandoned, total depth 4,047 feet. British-American's No. 1 M. L. Thompson, top sand 3,650 feet, initial production 72 bbls. per hour through pinched tubing, total depth 3,658 feet. H. L. Hunt's No. 3-B R. W. Fair, top sand 3,701 feet, initial production 180 bbls. per hour through open 2-inch tubing, total depth 3,706 feet.

McMahon-Moore and McCullough's No. 2 S. S. Cooke, top sand 3,725 feet, initial production 79 bbls. per hour through three-quarters-inch tubing choke, total depth 3,733 feet. Rasmussen and others' No. 1 S. S. Cooke, junked, total depth 2,945 feet. Sinclair-Prairie Oil Co.'s No. 8-A Jarvis, top sand 3,703 feet, initial production 40 bbls. in one-quarter hour through open tubing, total depth 3,709 feet. Sun Oil Co.'s No. 2-A A. V. Ritch, top sand 3,655 feet, initial production 95 bbls. per hour through open tubing, total depth 3,663 feet. Texarkana Oil Co.'s No. 2 T. O. Wright, top sand 3,679 feet, initial production 47 bbls. in one-quarter hour through three-quarters-inch tubing choke, total depth 3,689 feet. Weaver-Crim Corp.'s No. 1 Stone or Lee, top sand 3,791 feet, initial production 65 bbls. in one-half hour through open tubing, total depth 3,795 feet.

Upshur County

Mudge Oil Co.'s No. 4-A Free, top sand 3,690 feet, initial production 40 bbls. in 20 minutes through 1-inch tubing choke, total depth 3,745 feet; No. 5-A Free, top sand 3,700 feet, initial production 71 bbls. per day pinched through various chokes, total depth 3,752 feet. Rajo Oil Co.'s No. 5 J. K. Edwards, top sand 3,611 feet, initial production 40 bbls. in one-quarter hour through open tubing, total depth 3,643 feet. Sabinas Oil Co.'s No. 1-C T. M. Collins, top sand 3,716 feet, initial production 105 bbls. per hour through 1-inch tubing choke, total depth 3,729 feet. Saturn Oil Co.'s No. 1 W. F. Smith, top sand 3,688 feet, dry and abandoned, total depth 3,716 feet. Simms and Stanolind Oil & Gas Co.'s No. 4-B J. J. Flewellen, top sand 3,752 feet, initial production 70 bbls. in 45 minutes through open tubing, total depth 3,761 feet.

TANK WAGON CHANGES

(Continued from Page 38)

N. Mex., and Boise and Twin Falls are unchanged.

The Standard Oil Co. of Louisiana, April 14 advanced the tank wagon and service station prices of gasoline one-half cent throughout its territory.

The Standard Oil Co. of Nebraska, April 16 advanced its tank wagon and service station prices on gasoline 1 cent a gallon throughout Nebraska except in a few cases where adjustments were made. In Omaha the new prices are 15.9 and 16.9 cents; Norfolk, 17.75 and 18.75 cents; North Platte, 18 cents each. The tank wagon price of kerosene in McCook was advanced from 7.5 cents to 10.75 cents.

The Standard Oil Co. of Ohio April 18 announced an increase of 1 cent a gallon in tank wagon and service station prices for gasoline, making them 17.5 and 18 cents.

NO DEAL WITH RUSSIA CONSIDERED LIKELY

NEW YORK, Apr. 18.—Paris cables today indicating that Sir Henri Deterding, managing director of Royal Dutch-Shell, is negotiating with the Soviet government for a pledge of petroleum curtailment were received with skepticism here by Richard Airey, president of Asiatic Petroleum Co. and American representative for Sir Henri. Mr. Airey said he had not heard of such negotiations and felt certain none was in progress.

The Paris report, it is indicated, is based on the recent proposal by J. B. Aug. Kessler, managing director of Royal Dutch, for a world compact on oil production, to take in Russia.

Advices from London today state that the Soviet marketing agency in the United Kingdom, which has refused to renew its agreement with other major companies unless further increases in sales quota are allotted Russian petroleum products, is selling gasoline in Great Britain at a loss of 4 cents per gallon in order to meet the competition of the "combine."

ROCKY MOUNTAIN RUNS

Average daily pipe line runs from fields in the Rocky Mountain territory for the week ended April 16 follow:

	Bbls.
WYOMING	
Salt Creek	22,030
Badger Basin	50
Big Muddy	1,580
Byron-Garland	500
Dallas-Derby	380
Dutton Creek	70
Elk Basin	560
Ferris	30
Frannie	2,160
Grass Creek	2,090
Hamilton Dome	740
Hudson	430
LaBarge	880
Lance Creek	100
Lost Soldier	2,410
Midway	70
Oregon Basin	630
Osage	1,100
Pilot Butte	30
Rock River	1,690
Poison Spider	30
Teapot	20
Total Wyoming	37,580
MONTANA	
Buckley-Border	640
Cat Creek	920
Dry Creek	200
Kevin-Sunburst	3,430
Lake Basin	60
Pondera	1,240
Total Montana	6,490
COLORADO	
Florence	460
Fort Collins	840
Iles	830
Moffat	1,280
Orchard	380
Rangely	80
Tow Creek	290
Total Colorado	4,170
NEW MEXICO	
Rattlesnake	705
Hogback	350
Table Mesa	72
Artesia	736
Cap Rock	1,083
Hobbs	30,495
Jal	910
Lea City	2,036
Eunice	500
Texas Pacific	106
Total New Mexico	36,993
Total Rocky Mountain area	85,233
Total previous week	86,717
Difference	1,484

COLOMBIA CRUDE PRICE UP

An Associated Press dispatch from Bogota, Colombia, April 16, says: The Tropical Oil Co., a subsidiary of the Standard of New Jersey and the only producing company in Colombia, raised the oil price today to $1.21 per barrel. It was the third increase in a month and brought the price to the highest point in a year.

Big Drop in Production in Oklahoma

Crude Oil Output Last Week 56,000 Bbls. per Day Below Preceding Week. New Big Wells in Oklahoma City Field

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

The decline in daily average crude oil production in Oklahoma for the week ending April 16, was estimated at 56,000 bbls, and brings the State's production to approximately 395,000 bbls. per day, which is the lowest reported for any week during the year. The decline is believed to be mostly in the Oklahoma City Field which averaged only 67,300 bbls. for the seven days. The big pool declined from 121,065 bbls., the previous week's record.

At the present time the most active area outside of the Oklahoma City Field is the Fish Pool, in eastern Seminole County. Fifteen tests are drilling or preparing to drill in the area. About a dozen wells have been completed, producing from the Wapanucka lime, and these are permitted to produce 3,500 bbls. daily of their potential of approximately 15,500 bbls. daily.

The new Sacred Heart Pool, in southern Pottawatomie County, is now considered an area that may produce from the Simpson sand, Viola lime and the Wilcox sand. All of these horizons have been found productive, although developments have been limited. The Sacred Heart area underwent a seismograph survey for some time and local highs have been found which have proved productive. Four new operations are getting started in the area and more are expected around the two producing wells.

Interesting Wildcat

One of the interesting wildcat tests in the State is the Barnsdall Oil Co. and others' No. 1 Gray, NE cor. SW, Section 25-6-4, Pottawatomie County, which has reported showings of oil in both the Viola lime and Simpson sand. The Viola lime oil showing was found at 3,292-3,335 feet, where oil rose 400 feet in the hole. The Simpson sand showing was found at 3,345-48 feet where the oil increased to 1,000 feet in the hole. It was swabbed and made 25 bbls. in two hours. On the last report the test was drilling at 3,398 feet, still in the Simpson sand formation. The operators expect to drill the test to the Wilcox sand formation.

The possibilities of extending production to the southwest in the Oklahoma City Field were considered excellent when the Phillips Petroleum Co.'s No. 1 Berg, NE cor. SW, Section 26-11-3w, was preparing to make a production test after cementing and cleaning out to the bottom of the hole. The casing is cemented at 6,412 feet and the total depth is 6,595 feet. Indian Territory Illuminating Oil Co.'s No. 1 Wickline, SW cor. SW NW, Section 26-11-3w, a half mile west of the No. 1 Berg, is a new location. Same company's No. 1 Miller, NE cor. NW, Section 35-11-3w, a half mile south of No. 1 Berg, is another new location. Both of these tests are considered important as they will determine the future possibilities of production in the southwest part of the field. The tracts in that part of the field are of large size, and it is believed the development will be orderly.

Oklahoma City's Allowable

The allowable production of the Oklahoma City Field was reduced to 101,000 bbls. daily by the Corporation Commission's recent order for the last half of April. It was effective April 16. The new order was signed by all members of the commission.

There is practically no change in the rules and regulations accompanying the order.

A total of 3,000 bbls. daily was allotted to the Silicious lime zone in the field, and the 97 wells, outside of the lime zone showing 3 per cent or more water, are allowed a total of 9,700 bbls. daily. A total of 3,500 bbls. was allowed to new wells.

The 25-bbl. allowable per well remains the same, adding a total of 17,500 bbls. daily, while the remainder of the allowed production will be made up from a 2 per cent allowable on the 694 wells, having an adjusted potential of 3,326,966 bbls. daily.

The next hearing will be given April 28 to consider the pipe line nominations for the month of May. The commission is also expected to act on the suggestions of Umpire Ray M. Collins that 163,000 bbls. underproduction of 17 wells in the Oklahoma City Field be wiped off the record. During the April proration periods these wells were permitted to flow to capacity in order to make up the underage if possible. Mr. Collins stated in the petition that the wells cannot make their allowable and therefore are unable to make the underage.

Pipe Line Record

Pipe line nominations made during the week for the last half of April compared to the first half of the month, and the actual daily average pipe line shipments for the first 10 days of the month were as follows:

Company—	New nominations	Old nominations	10-day shipments
Champlin	953	936	953
Continental	2,000	2,000	3,591
Empire	18,000	18,000	16,712
Globe	8,000	8,000	7,172
Magnolia	5,500	7,500	4,789
Oklahoma	25,000	25,000	22,610
Operators	....	1,350	....
Prairie	....	900	823
Sinclair-Texas	....	....	5,270
Sinclair-Prairie	7,500	....	....
Shell	3,500	6,000	6,849
Stanolind	18,000	20,000	19,769
Tidal	273	300	273
Wilcox	....	....	1,382
Anderson-Prichard	....	....	20
Canadian	77	500	77
Capitol	81	71	81
Century	1,500	2,000	1,419
I. T. I. O.	5,000	5,000	4,836
Peacock	500	209	923
Petroleum	1,500	2,000	990
Standish	3,500	....	....
Major Products	253	350	253
Total	101,137	100,110	98,792

Testimony was presented at Saturday's meeting showing that there were 694 wells in the Oklahoma City Field with a combined adjusted potential of 3,326,966 bbls. a day, which were eligible to produce during the last half of the month. There were 97 wells outside of the lime zone that were making 3 per cent or more water. The daily average production of the lime zone wells for the first 10 days of the month was 2,801 bbls.

The lease stocks of crude oil in the Oklahoma City Field as of April 1 totaled 542,859 bbls. and it was estimated the production for the first 15 days of the month was 1,680,650 bbls. making a total of 2,223,509 bbls. of crude oil available to the pipe lines. It was estimated the pipe line shipments for the 15-day period would be 1,473,390 bbls. which would leave an estimated 750,119 bbls. in stocks on hand April 16.

The allowable production for the first 15 days in April totaled 1,920,202 bbls. which after deducting the estimated production for the period would leave an estimated current underproduction of 239,552 bbls.

Another active area in the State at the present time is the Conservative Pool, in Pontotoc County. The Pioneer Petroleum Co.'s No. 1 Bayne, SE cor. SW SW Section 16-5-6, has landed a liner on top of a showing of oil found at 1,674-82 feet, and after cleaning out the oil rose 1,100 feet in the hole. The well extends production in the area to the north.

Dickson Oil Corp.'s No. 1 Jackson, SW cor. Section 22-5-6, in the Conservation Pool, swabbed 175 bbls. of oil in 24 hours from the regular sand at 1,707-26 feet.

Marrs & Mayer's No. 2 Meyer, in Section 21-5-6, found a showing of oil in sand at 1,615-16 feet that rose 1,100 feet in the hole in a short time.

Carter Oil Co.'s No. 1 in the SE cor. Section 12-3-8w, Grady County, is a new location announced during the week. It is believed to be located on a geophysical high.

Two New Wells

Phillips Petroleum Co.'s No. 1 Still, SE cor. NW NE Section 3-11-3w, in the Walnut Grove addition, flowed 7,707 bbls. of oil in three hours, through a 4-inch choke. The gas was estimated at 52,000,000 feet a day. The 9-inch casing was landed at 6,282 feet and the total depth of the well was 6,450 feet.

Lassen & Korn's No. 1 Coast, NW cor. NW SE Section 15-11-3w, which was completed March 24, flowed 2,725 bbls. of oil in two hours with gas estimated at 62,000,000 feet a day. The Wilcox sand was found at 6,393-6,402 feet.

The latest listing of wells making more than 3 per cent water includes Anderson-Prichard's No. 3 Gibbons, Century Petroleum Co.'s No. 1 Jefferson, Indian Territory Illuminating Oil Co.'s No. 4 Ferndale, Slick-Urschel's No. 4 Baker, and No. 6 Hoopes and No. 1 Hussman.

A lower demand for Oklahoma City crude for the last half of April was responsible for the Corporation Commission's order limiting the flow to 101,000 bbls. daily from April 16 to 30.

Companies making new nominations were the Sinclair-Prairie Pipe Line Co., 7,500 bbls. daily and the Standish Pipe Line Co., 3,500 bbls. daily. At the last hearing the Sinclair-Texas Pipe Line Co. did not make any nomination and the Prairie Pipe Line Co. took only its allowable production. The two companies are now consolidated. The Standish Pipe Line Co. (Phillips Petroleum Co.) made its first nomination in several months.

Seminole Production

The production from the Greater Seminole area for the week ending April 15 was approximately 142,720 bbls. a day. The Seminole Field, which includes the first 12 pools listed below, averaged 102,625 bbls. a day.

Pool—	Bbls.
Little River	18,325
East Little River	4,060
Carr City	11,925
Maud	2,075
Mission	6,350
Bowlegs	12,500
Earlsboro	14,575
South Earlsboro	1,735
East Earlsboro	12,525
Seminole	13,595
East Seminole	1,150
Searight	3,810
Total	102,625
Allen	8,595
Asher	585
Wanette	4,085
Konawa	4,910
Sasakwa	1,795
St. Louis-Pearson	20,125
Total	142,720

Independent Pipe Line Co., a subsidiary of Phillips Petroleum Co., started running oil through its new pipe line the middle of the week. The pipe line was purchased from the Prairie Pipe Line Co. and runs from the Oklahoma City Field to the Earlsboro Field in Seminole County, a distance of approximately 42 miles. It is an 8-inch line.

The acquisition of this pipe line caused the cancellation of the plans of the company for the construction of a 6-inch pipe line over the same route. The sale of this line by the Sinclair-Prairie Pipe Line Co. leaves that company with one 8-inch pipe line from the Oklahoma City Field to its Panova Station, near Shawnee.

Phillips Petroleum Co.'s No. 1 Kry, NE cor. NE NE, Section 3-11-3w, in the north end of the field, and a recent completion, completed its 4-hour potential test making 7,596 bbls. of oil. It was producing through a 4-inch choke. The gas was estimated at 61,000,000 feet a day. The 9-inch casing was landed at 6,313 feet and the total depth is 6,480 feet.

Phillips Petroleum Co.'s No. 1 Houston, NW cor. SE NE, Section 3-11-3w, was completed making 6,028 bbls. of oil in three hours before sand cut its flow line. It was then shut down. The gas was estimated at 46,000,000 feet a day. The 9-inch casing was landed at 6,289 feet and the total depth was 6,450 feet.

The Slick-Urschel interests' No. 10 Classen-Edwards, NE cor. NW SW, Section 3-11-3w, which was cleaned March 25 and then shut in, flowed 4,767 bbls. of oil in four hours April 14. The gas was estimated at 28,500,000 feet a day. The total depth of the well is 6,491 feet and the 9-inch casing is cemented at 6,351 feet.

Holdenville Development

The townsite of Holdenville is being leased and the city officials are not making any attempt to halt the progress of a town-lot development. One mile west of the townsite the Limestone Oil & Gas Co.'s No. 1 Whitely, NW cor. SE NE Section 14-7-8, is a location. It is the south offset to the Lyons Petroleum Co.'s No. 1 Jacobs, which was completed in March, 1931, at a total depth of 3,464 feet, and is still producing.

Head and others have made a location for No. 1 Breeding, SE cor. NE NE Section 12-7-8, a quarter of a mile north of the city limits. It is believed this location was directly responsible for the active leasing campaign of the city lots and blocks. Eason Oil Co.'s No. 1 Higgins was spudding. It is located about 1½ miles north of the city. It will test both the Cromwell and the Booch sands.

G. W. Haines and J. C. Chambers are assembling a block of approximately 500 acres around a well that was drilled several years ago in C SE NE Section 9-1s-8w, Stephens County, for a 2,650-foot test. The first test found a showing of gas at 1,300 feet and a showing of oil at 2,100 feet. There is considerable lease trading around the old Comanche district in Sections 1-2s-8w and 2-2s-8w, Stephens County.

The discovery well in the Turkey Mountain sand in Okmulgee County is holding up in production. The well is Fred Cusack's No. 1-A Schadt, NE cor. SE SW Section 15-13-14. It continues to produce at the rate of 50 bbls. a day from sand at 2,730-35 feet. The hole fills up at the rate of 100 feet an hour, and fills up 1,200 feet with oil over night after being swabbed down. It may be drilled deeper and given a shot. The discovery of the Turkey Mountain sand may lead to redrilling of a large territory in Okmulgee County.

Developments in the Stephens County oil fields were slow during the week. Production was extended a quarter of a mile in the Comanche Field. G. Pace's No. 1 Dilley, NW cor. NW SW SW Section 22-2s-7w, is estimated at 175 bbls. a day from sand at 1,734-39 feet. The well extends production in the area a quarter of a mile. Some operator is moving in a rig for No. 2 Dilley, SW cor. SW NW SW Section 22-2s-7w.

Same operator is preparing to drill out cement plugs at No. 5 Gilworth, NW cor. NW SE SW Section 22-2s-8w, to test a sand at 1,550-55 feet. The test is located on the east side of the old Empire Field.

Crude oil storage in the Oklahoma City Field was reduced 204,477 bbls. in March leaving the total on March 31 606,381 bbls. according to the umpire's report. The total storage on that date was considered below the average carried as tank bottoms in that field.

Production and Shipments

The total production of the Oklahoma City Field in March and the total crude oil shipments from the field in the same period are shown by companies in the following table:

	Wells	March prod.	March shipments
Acme	1	12,072	12,338
Addition	1	18,572	20,508
American	1	2,788	2,896
Anderson-Kerr	1	2,475	2,489
Ander.-Prichard	27	154,830	169,998
Argood	1	3,792	2,177
Blackstock	1	1,162	1,446
Blackwell	5	17,983	21,716
British-Amer.	9	43,220	43,805
California	1	105	1,314
Capitol P. & R.	2	10,865	11,812
Cap. Prod. Tr.	1	9,910	12,797
Century	5	43,736	42,517
Champlin	10	12,374	12,038
Chatham	2	13,823	13,934
Colline	34	46,705	47,017
Continental	12	12,846	35,750
Courter	1	2,631	2,679
Cromwell-Frank	31	103,262	109,091
Dabney-John	1	2,605	2,909
Danciger	1	5,696	5,653
Denver	6	32,168	39,912
Den. Rey. Pl.	1	21,067	22,531
Dengall	1	37,810	39,411
Donleon	2	15,210	11,921
Eason	3	9,636	9,785
Empire	3	24,724	25,742
Franco-Domin.	1	20,928	21,545
Franklin	38	133,340	130,602
Great South	1	2,961	4,621
Government	2	7,143	5,314
Hall & Briscoe	2	9,946	2,202
Harrell-Davis	1	1,098	915
Holman, Inc.	1	16,645	14,971
I. T. I. O.	293	580,255	661,541
Kedberg	1	None	None
Kessler	1	None	None
Lassen & Corn	1	2,475	571
Mabee	4	38,719	38,061
Marco	1	.....	.....
Marshall	3	13,213	10,888
McArthur	2	6,196	7,417
Mid-Kansas	6	6,617	7,805
Minnehoma	1	10,041	4,315
Morgan	3	14,456	12,480
Ocate	3	22,801	22,765
Oil, Inc.	4	31,754	33,167
Payne & Johnson	1	7,067	9,939
J. H. Peacock	3	14,543	15,118
Phillips	64	535,460	612,963
Plains	2	3,704	3,737
Prairie	14	25,516	24,958
Rajah	1	6,415	7,571
Reynolds & Unruh	1	8,158	7,440
Refiners Prod.	2	2,548	2,593
Russell	2	17,467	19,735
Scott & Co.	2	5,362	8,011
J. C. Shaffer	6	21,327	21,614
Shell	8	9,792	9,650
Sinclair	54	57,534	58,406
Skelly	23	60,238	61,164
Springrose	1	6,172	6,490
Stauffer	1	3,552	2,713
Sunray	4	27,202	43,622
Watchorn	1	13,248	18,965
Westgate	7	71,717	72,815
Wilcox	10	27,752	27,645
Wrightsmith	2	5,969	8,587
Total	846	2,967,134	3,197,906
Daily average		95,714	103,158

Lincoln County

Pure Oil Co.'s No. 1 Pinkston strip, SE cor. NW Section 1-15-6, an old well being deepened, is fishing at 3,675 feet.

Creek County

Gled Oil Co.'s No. 8 Carter, SW cor. SE Section 20-19-9, is spudding. J. E. Abbott and Holmes Oil Co. and others moved a machine in for No. 1 Unallotted, NE cor. NW NW Section 23-19-9. Carter Oil Co., Sherry and Murta's No. 5 Wilson, SW cor. NE NW Section 32-17-12, is a rig. E. Shamblin and others made location for No. 2-A Wilson, NE cor. SE NE Section 21-15-8. F. R. Billingslea and others' rig is up for No. 3 Wayman "A", SW cor. NW NW Section 22-15-8. R. E. Freeman and others' No. 1 Young, SW cor. NE NW Section 15-19-7, has been abandoned at 3,255 feet. H. E. Dowd and others' No. 1-B Weaver, SW cor. SE Section 16-17-11, is dry and abandoned at 607 feet. McCurry and others' No. 2 Watkins, CSL NE SW Section 28-17-11, is a dry hole at 2,242 feet. National Investors Co.'s No. 1 Posey, NW cor. SW SE Section 17-16-8, has been abandoned at 3,859 feet. Hanan & Grant's No. 1 Garrett, NW cor. SE NE Section 20-16-10, has been temporarily abandoned at 1,287 feet. E. Shamblin and others' No. 1 Wilson, SE cor. NE NE Section 21-15-8, has been completed for 80 bbls. in Bartlesville sand at 2,782-2,824 feet.

Marshall County

J. B. Liggett and others' No. 1 McDuffee, SE cor. NE SW Section 3-7s-6, is drilling at 150 feet. C. Davis and others' No. 1 Minters, NW cor. SW NW SW Section 30-7s-6, has been completed for 8 bbls. in sand at 481-94 feet.

Muskogee County

J. M. Foltz and others moved a machine in for No. 1 Buell, SE cor. SW NW Section 8-15-18.

Oklahoma County

J. C. Shaffer made location for No. 1 McKee, SW cor. NE NW Section 3-11-3w, Oklahoma City Field. Phillips Petroleum Co. and others' No. 1 Ingle, SW cor. SE SW NE Section 3-11-3w, Block 24, Walnut Grove addition, is a cellar. Anderson & Kerr and Harrison Smith's No. 1 Potts, Block 86, Lot 1, Shield's South Oklahoma City addition, CSL SE SE NW Section 15-11-3w, is a cellar. Indian Territory Illuminating Oil Co. and Shaffer made location for No. 6 Lawrence Place, NW cor. SW NE Section 15-11-3w. Anderson & Kerr and others' No. 1 Lippert, Block 3, Lot 44, Richolson Heights Addition, SW cor. NW SE Section 22-11-3w, is a rig under construction. No. 1 Gallagher, Block 3, Lot 2, Richolson Heights addition, NE cor. SW NW SE Section 22-11-3w, is a rig going up. R. A. Wallace and others' No. 1, Block 2, Lot 41, Richolson Heights addition, CEL NW NW SE Section 22-11-3w, is a cellar. Harrell & Davis and others' No. 1 Noah, Block 7, Lot 40, Wilmont Place, SE cor. SW NE SW Section 22-11-3w, is a cellar. Ralph Day, Inc., has the cellar dug for No. 1 Leverich, SE cor. NW NW SE Section 22-11-3w, Block 2, Lot 49, Richolson Heights addition. Murray & Stevens and others' No. 1 Harper-Turner, Block 1, Lots 13 and 14, Hill's Subdivision of Fletcher Heights, NE cor. NW SE Section 22-11-3w, is a rig going up.

Hall & Briscoe's No. 1 Stigall, SW cor. SE Section 3-11-3w, has been completed for 13,362 bbls. in four and a third hours on a 6-inch choke, producing from Wilcox sand at 6,297-6,480 feet, total depth 6,487 feet. Phillips Petroleum Co. and Indian Territory Illuminating Co.'s No. 1 Kry, NE cor. NW Section 3-11-3w, topped Wilcox sand at 6,328 feet, drilled to 6,480 feet and flowed 10,080 bbls. in five and one-half hours.

Okfuskee County

Rossiter Oil Co.'s No. 1-A fee, NW cor. SW NW NE Section 22-12-11, has been completed for 4,000,000 feet of gas in sand at 2,566-84 feet.

Okmulgee County

C. D. Klingensmith has the rig up for No. 3 Grayson, CNL SE NW Section 35-16-11. A. E. Kirkland & Son's No. 11 Bell, SE cor. NW NW Section 17-15-13, is drilling at 1,460 feet. J. L. Selby's No. 5 Flint, CEL NE NW Section 26-14-14, is drilling at 675 feet. B. L. Wigton and others' No. 1 Daniel, NE cor. SE SE Section 25-13-13, is rigging up. J. L. Selby's No. 4-A Flint, NE cor. NW Section 26-14-14, has been completed for 30 bbls. in sand 938-63 feet, total depth 978 feet. J. H. Rebold's No. 1 Daniel, NE cor. NW NE Section 1-12-13, is dry and abandoned at 2,708 feet.

Osage County

Bay Oil Corp. is moving in the rig and tools for No. 1, NW cor. NE NW Section 13-23-7. Midco Oil Corp. made location for No. 24, SE cor. NE SE Section 18-22-10. C. T. Mathews made location for No. 1, NE cor. NW Section 26-21-9. Lindy Oil Co.'s No. 4, SW cor. NE NW SW Section 29-20-1w, is dry and abandoned at 1,425 feet.

Pontotoc County

Gus Dalaney's No. 1 Russell, SE cor. SW SE Section 29-5-8, has been abandoned at 1,000 feet.

Pottawatomie County

Magnolia Petroleum Co. is erecting the rig for No. 1 Martin, SE cor. NE SW Section 34-7-4. Carter Oil Co. and others' No. 1 Monnet, SW cor. Section 35-7-4, has been deepened from 4,260 feet to 4,262½ in Simpson dolomite and flowed 1,383 bbls.

Seminole County

Amerada Petroleum Corp.'s No. 5 L. Tiger, CWL NW SE Section 3-8-5, Carr City Pool, is rigging up. No. 6 L. Tiger, CWL E half Section 3-8-5, is also rigging up. The Texas Company's No. 9 Reed, SE cor. NE NE Section 14-8-6, Bowlegs Pool, is cleaning out to deepen from 4,360 feet to the second Wilcox sand. Blackwell Oil & Gas Co.'s No. 1-A Jonah, SW cor. NE Section 15-9-7, East Seminole Pool, has been deepened from 3,520 feet to 3,596 feet and abandoned.

Wagoner County

R. A. Godfrey's No. 1 Davis, NE cor. Section 18-16-18, has been abandoned at 1,024 feet.

WILDCAT OPERATIONS IN OKLAHOMA

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location— Remarks:

Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w ..... S.D. 1,322 ft.

J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w .. S.D. 5,502 ft.

BECKHAM COUNTY

Pattel Royalty's No. 1 Goose Tree, SW SE SW SE Sec. 32-10-23w ..... Rig.

Price-McFann's No. 1 Webster, C SW SW Sec. 34-8-26w .. T.D. 2,344 ft.; plugged back to 1,890-1,900 ft.; 1,500,000 ft. gas.

Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w .. Waiting on cmt. to set 430 ft.

Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-22-22w ..... S.D. 2,550 ft.

White et al's No. 1 Green, SW cor. Sec. 34-1v-24w ..... S.D. 3,575 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-19-10w ..... S.D. 5,115 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w .... S.D. 1,115 ft.

CHEROKEE COUNTY

La Piere et al's No. 1 Woods, C SE SE Sec. 27-17-21 .... S.D. 1,504 ft.

COAL COUNTY

Radial Oil Co.'s No. 1 McGraw, NE NW Sec. 2-1s-8 .... S.D. 1,450 ft.

Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8 ..... Show wtr. 1,155-60 ft.; drlg. 1,845 ft.

COMANCHE COUNTY

G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w ..... S.D. 1,460 ft.

CREEK COUNTY

R. F. Moore et al's No. 1 Gilliam, NE cor. SW NW, Sec. 17-17-8 ..... S.O. 2,815-39 ft.; shot 160 qts.

CUSTER COUNTY

Miley Pet. Co.'s No. 1 Caldwell, NE Sec. 12-14-14w ..... Location.

GRADY COUNTY

Schoonmaker et al's No. 1 Station, NW cor. 35-4-6w ..... Rig.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w .. S.D. 5,850 ft.

GARVIN COUNTY

Malarnee et al's No. 1 Phillips, NE SW SE Sec. 24-2-2w .. S.D. 4,830 ft.

GREER COUNTY

Dovell et al's No. 1 Capell, NW cor. Sec. 1-7-22w ..... 5,000,000 ft. gas 1,455-65 ft.; T.D. 1,760 ft.

French's No. 1 Murphy, SW NW Sec. 23-7-21w ..... S.D. 1,645 ft.

HASKELL COUNTY

Ault et al's No. 1 Hall, NW SW SW Sec. 14-9-19 ..... S.D. 2,000 ft.

Ault et al's No. 1 Hall, SE NW Sec. 25-19-9 ..... S.D. 200 ft.

KAY COUNTY

Bluebaugh et al's No. 1 Indian, C NW NE Sec. 30-25-1 ... Drlg. 2,005 ft.

Harris & Haun's No. 1 Watson, SW NW Sec. 28-28-1w ... Drlg. 3,637 ft.

Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1 ..... Location.

Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 9-27-2 ..... S.D. 3,693 ft.

Blackwell Oil Co.'s No. 1 Harshman, Sec. 2-26-1w ..... Rig on ground.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 8-7-18w ..... Drlg. 910 ft.

LATIMER COUNTY

P. English's No. 1 Unknown, NW SE Sec. 16-6-19 ..... S.D. 1,542 ft.

LINCOLN COUNTY

Sovereign Oil's No. 1 Selakek, NE SE, Sec. 2-12-5 ..... Drlg. 3,805 ft.

Hilton Phillips' No. 1 Phillips, SW NW, Sec. 2-14-3 ..... Drlg. 4,810 ft.

Mote et al's No. 1 School Land, NW cor. Sec. 36-17-5 .... Drlg. 1,850 ft.

NOBLE COUNTY

Wentz Oil's No. 1 Wolff, C SE NW, Sec. 17-20-2w ..... Location.

OKLAHOMA COUNTY

Citizens Oil Co.'s No. 1 Sage Barber, NE cor. Sec. 21-11-3w ..... S.D. 1,200 ft.

L. C. Hivick's No. 1 Sunset Addition, NW SW NW Sec. 17-11-3w ..... S.D. 5,515 ft.

PAWNEE COUNTY

Rookstool's No. 1 Wylie, NW NE SW Sec. 6-20-5 ..... S.D. 1,950 ft.

PITTSBURG COUNTY

Ruby Ann Oil Co.'s No. 1 George, CEL NW SE, Sec. 3-4-16 ..... Drlg. 630 ft.

Tape Oil Co.'s No. 1 Fulton, SE Sec. 34-7-14 ..... S.D. 1,700 ft.

J. Morrison's No. 1 Fowler, NE SE Sec. 13-7-17 ..... Rig.

C. Kennedy's No. 1 Travis, C SW NE Sec. 15-7-14 ..... Rig.

C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 ..... Rig.

POTTAWATOMIE COUNTY

Clara Oil & Gas Co.'s No. 1 Unknown, SW NW NE, Sec. 1-9-4 ..... Spudding.

Barnsdall et al's No. 1 Gray, NE SW Sec. 25-6-4 ..... R.U.S.T. 3,243 ft.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW Sec. 23-12-24w ..... S.D. 5,150 ft.

L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w ..... S.D. 3,420 ft.

WASHITA COUNTY

Miley Pet. Co.'s No. 1 Wolfe, NE SW Sec. 23-9-17w ..... Rig.

Cooper & Terhune's No. 1 Blocker, NW cor. Sec. 29-8-19w ..... Drlg. 2,740 ft.; show oil 2,459-67 ft.; S.D. 2,757 ft.

Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 ..... S.D. 1,265 ft.

OKLAHOMA PANHANDLE

TEXAS COUNTY

Three Way Oil Co.'s No. 1 Crane, SW NW Sec. 11-1-1B .. T.D. 4,720 ft.; to cement.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Brookshire's No. 1 R. W. Rowland, NW NE SE Sec. 18-3s-10 ..... S.D. 1,720 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW Sec. 7-7-10 .. T.D. 650 ft.; abd.

Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 ..... T.D. 740 ft.; plugged back to 450-80 ft.; abandoned.

CARTER COUNTY

Lundy's No. 1 Spraggins, C NE NW SW Sec. 8-1s-2w .... Drlg. 2,630 ft.

JEFFERSON COUNTY

Smith's No. 1 McCarty, SE NW NE Sec. 18-4s-8w ..... Location.

MARSHALL COUNTY

Liggett et al's No. 1 McDuffee, SE NE, Sec. 3-7S-6 ..... Rig.

Starrett et al's No. 1 Henry, NE NW Sec. 22-7s-6 ..... Drlg. 630 ft.

Everett et al's No. 1 Agres, SE NE Sec. 14-7s-6 ..... S.D. 1,170 ft.

Newman et al's No. 1 Henry, NW cor. Sec. 22-7s-6 ..... Rig abd.

McCURTAIN COUNTY

Prassell et al's No. 1 Wagoner, SE NE Sec. 5-8s-27 ..... Drlg. 500 ft.

Stampfs et al's No. 1 Harris, SW NW SW Sec. 14-9s-25 .. S.D. 2,731 ft.

Stewart's No. 1 Patterson, C SE SE Sec. 7-6s-24 ..... S.D. 1,411 ft.

PUSHMATAHA COUNTY

Whitehead et al's No. 1 Messer, SE SW SW Sec. 35-3s-18 ..... Drlg. 1,500 ft.

STEPHENS COUNTY

Brown's No. 1 Hightower, SW SE NE Sec. 15-3s-5w ..... Sand 990-1,004 ft.; S.O.; abd.

George's No. 1 Ryan, NW SW NE Sec. 31-3-15 ..... S.D. 510 ft.

Reno County Gas Well Breaks Record

Shell-Olson Test Makes 86,500,000 Feet in Day. Good Wells in Ellsworth County. Pipe Line to Burrton Area

By W. A. Spinney
Staff Correspondent, Kansas Fields

Kansas oil production shows an increase of about 2,200 bbls. daily, for the week ending April 16. The daily average for the State was 99,700 bbls.

The increase was in the Voshell Pool, in McPherson County, where operators completed a 5-day potential test of the field. The test showed a total of 9,969 bbls. a day for the field and the Public Service Commission allowed the operators to produce 53 per cent of the potential or 5,283 bbls. daily, from the field. The test revealed that the wells were making considerable water.

State's Largest Gas Well

The largest gas well ever completed in Kansas was the Olson Drilling Co. and Shell Petroleum Corp.'s No. 1 Goering, C NE SW, Section 25-23-4w, in the northeastern part of Reno County. It gauged 86,500,000 feet a day with a rock pressure of 1,170 pounds from the chat at 3,237-3,392 feet. The gas is dry, and no oil was showing. It extended the producing area in that part of the county a half mile south and a half mile west of the discovery well. The well is considered high on the structure and indicates a large gas reserve for the area. Many express the opinion that it will lead to a drilling campaign. The only companies with acreage close to the well are the Sinclair-Prairie Oil Co. with the SE, Section 26-23-4w, and the Gypsy Oil Co. with the NE, Section 35-23-4w. All of the other acreage is owned by the Olson Drilling Co. and Shell Petroleum Corp. The Shell has a block of 5,280 acres, which it has farmed out to the Olson Drilling Co., retaining an interest.

Olson Drilling Co. and Shell Petroleum Corp.'s No. 1-B Goering, C NE NW, Section 25-23-4w, is a new location south of the large gas well.

Williams & Moore's No. 1 in the C SW SE Section 23-16-10w, Ellsworth County, found a hole full of oil in Silicious lime at 3,380-90 feet.

Aylward and others' No. 4 Stratman, NW cor. NE SW Section 1-17-10w, made 90 bbls. of oil an hour on a five-hour swabbing test from Silicious lime at 3,254-61 feet. It is being tubed with 3-inch tubing and will be pumped. It is estimated as a 1,500-bbl. well.

Skelton Oil Co. and others' No. 1 Ott, C SE SE Section 16-19-14w, a wildcat in Barton County, was drilling deeper after finding a showing of gas estimated at 3,000,000 feet, at 3,483-85 feet. On the last reports it was drilling slowly on account of a caving hole.

Mid-West Refining Co.'s No. 11 in the C NE Section 1-23-12w, Stafford County, filled up 1,000 feet with fluid from the Silicious lime at 3,578-3,616 feet. The oil was found at 3,603-16 feet.

Vickers Petroleum Co.'s No. 1 Stoltenberg, NW cor. NE NW, Section 27-16-10w, Ellsworth County, found a showing of oil in the Silicious lime at 3,312-23 feet. The operators were landing 6-inch casing on top of the lime.

In the Great Bend area of Barton County, Skelton Oil Co.'s No. 1 Ott, C SE SE, Section 16-19-14w, is shut down at 3,380 feet. The crew is underreaming the 5-inch casing to the bottom of the hole in an attempt to shut off the water. A showing of gas estimated at 3,000,000 feet a day was found in sand at 3,483-85 feet.

Gypsy Oil Co.'s No. 1 Steckel, C NE NW, Section 31-19-10w, a wildcat about 2 miles north of the Isern Pool, in Rice County, is being put on the pump. The well had a showing of oil at 3,300-24 feet.

Slick, Pryor & Lockhart's No. 1 Stucky in Section 27-20-3w, McPherson County, an extension well north of the Voshell Pool, was making 40 bbls. of oil at the end of a two-day swabbing test.

In the northeast extension area of the Ritz-Canton Pool, in McPherson County, Derby Oil Co. and United Oil Co.'s No. 2 Lacquement, NW cor. SW, Section 21-19-1, swabbed at the rate of 50 bbls. It is estimated at 1,200 bbls. daily. The pay was found in the Viola lime at 3,401-12 feet.

Shell Petroleum Corp. has farmed out a block of acreage to the Tulsa Oil Co. south of Wichita in Sedgwick County. Tulsa Oil Co. will drill a test in the SE cor. SW, Section 8-28-2, on the block.

The pipe line to Frank Hollow's No. 1 Church Acre, in Section 20-22-3w, Harvey County, the only Hunton lime producing well in the State, is nearing completion. It is expected to be completed within a week. The pipe line will run to a loading rack and the oil will be shipped in tank cars to the Golden Rule refinery at Wichita.

Failure Leads to Deep Test

The first test of the Simpson sand below the Viola lime, in the eastern part of McPherson County, in the Ritz-Canton Pool, will be the Darby Petroleum Co.'s No. 2 B. Kaegi, SW cor. NE Section 20-19-1. The test proved a disappointment in the Viola lime horizon. The test offsets two Viola lime producers but failed to respond after being shot twice in that formation. The Simpson sand horizon is expected to be found within the next 60 feet. So far no production has been found in the Simpson sand horizon in the Ritz-Canton area. The No. 2 B. Kaegi is the north offset to the Derby Oil Co. and others' No. 1 Lacquement, which is rated as a 1,200-bbl. well, and the west offset is the same operators' No. 1 Gill, which has been producing at the rate of 1,500 bbls. a day.

Pipe Line to Burrton Area

The Derby Oil Co. announces it will construct a pipe line to serve the Burrton district in the northeastern part of Reno County and the western part of Harvey County. The pipe line will be an extension of the company's Valley Center carrier and will be approximately 24 miles long, extending from the Wright Pool, in Sedgwick County, to a point about 2 miles east of Burrton. It will consist of 4 and 6-inch pipe.

At Bell Station just north of the Wright Pool, the Derby Oil Co. has a loading rack at the south end of the 4-inch pipe line connecting with the Voshell and Ritz-Canton areas. At present the oil is being carried by tank car from the Bell Station to Valley Center, from which point it is relayed by the Derby Oil Co. pipe line to Wichita.

1,000-Bbl. Well

Vickers Petroleum Co.'s No. 1 Stoltenberg, NW cor. NE NW, Section 27-16-10w, in the southwestern part of Ellsworth County, swabbed 42 bbls. of oil an hour in a test of several hours. At no time during the test was the column of oil in the hole lowered under 600 feet off bottom. The well is estimated at 1,000 bbls. a day and it appears to be as good as the discovery well. The top of the Silicious lime was found at 3,308 feet and the 6-inch casing was landed at 3,317 feet. Oil was first found at 3,322 feet and the total depth was 3,335 feet.

In the Stratman Pool, in Ellsworth County, Sinclair-Prairie Oil Co.'s No. 1 Stratman, SW cor. NE SW, Section 1-17-10w, swabbed 100 bbls. of fluid after plugging back in the Silicious lime. The showing of oil was found at 3,282-85 feet and the test was drilled to a total depth of 3,328 feet where water was found. It was plugged back to 3,301 feet and given a 120-quart shot.

It was the second test in the area to the west of production in the Stratman Pool, to find water in the Silicious lime. The first test was T. Palmer and others' No. 1 Phelan, in Section 2-17-10w, which had nothing but water.

New developments in the townsite of Winfield in Cowley County include Wakefield and others' No. 1 Cavitt, on Lot 8, Block 31 of Highland Addition, in the NW cor. NE SW, Section 23-32-4, which made 250 bbls. of oil from the Silicious lime at 3,298-3,310 feet.

The deeper sand in the Wright Pool, near Valley Center, Sedgwick County, was found to contain water. Skelly Oil Co. and others' No. 9 Wilson, SW cor. NE, Section 1-26-1w, was drilled deeper from the old total depth of 3,365 feet. A hole full of water was found at 3,460-63 feet and the test was abandoned at a total depth of 3,474 feet.

R. E. Youker and others' No. 2 Grattan in Section 24-19-2w, in the Ritz-Canton Pool, was given a potential of 1,750 bbls. a day, in a 24-hour pumping test from the Viola lime at 3,397-3,415 feet.

Cowley County

Wakefield and others' No. 1 Cavitt, Lot 8, Block 31, Highland Park addition to the city of Winfield, NW cor. NE SW Section 22-32-4, has been completed for 250 bbls. in Siliceous lime at 3,298-3,310 feet.

Ellsworth County

Aylward and others made location for No. 5 Stratman, SW cor. SE SE Section 1-17-10w.

Greenwood County

Simmons and others moved the rig in for No. 9 Ellis, SW cor. SE SW Section 26-23-11. McGinnis and others staked location for No. 3 Peoples, NW cor. NE NE Section 33-23-11. No. 1 Beal, SE cor. SW Section 28-23-11, is dry and abandoned at 2,048 feet. Harwood and others' No. 2 Beal, SW cor. SE Section 28-23-11, has been completed for 30 bbls. in sand at 1,983-98 feet, total depth 2,004 feet. Empire Oil & Refining Co. and others' No. 4 Hillman, SW cor. NE NE Section 35-23-11, made 80 bbls. in sand at 1,858-78 feet, total depth 1,884 feet.

Harvey County

Stanolind Oil & Gas Co. and Amerada Petroleum Corp.'s No. 1 Froese, SW cor. NW Section 20-22-3w, is a rig.

McPherson County

Harris & Haun and others' No. 1 Overman, NW cor. NE SE Section 20-19-1w, is rigging up to deepen from 2,970 feet. Shawver & Shell Petroleum Corp.'s No. 2 Lively, SW cor. NW NW Section 21-19-1w, is preparing to deepen from 3,000 feet. Mid-Kansas Oil & Gas Co. made location for No. 2 Helstrom, SW cor. NW SE Section 35-19-3w. L. W. Prunty Drilling Co. and others' No. 1 Kasey, SE cor. NW NW Section 35-19-3w, is a rotary rig under construction. Shell Petroleum Corp. is building the rig for No. 1 Lawrence, SE cor. NW Section 35-19-3w. Phillips Petroleum Co. and Shell Petroleum Corp.'s No. 4 Anderson, NW cor. NE NW Section 30-19-1w, has been completed for potential of 896 bbls. in Viola lime at 3,409-3,424 feet. Youker and others' No. 2 Gratton, NE cor. NW SW Section 24-19-2w, topped Viola lime at 3,397 feet, drilled to 3,415 feet and gauged 1,716 bbls. after shooting 30 quarts. Shell Petroleum Corp.'s No. 1 Helstrom, SW cor. NE Section 35-19-3w, west of Ritz-Canton area, flowed 225 bbls. in six hours from chat at 2,989-3,051 feet.

Reno County

Olson Drilling Co. and Shell Petroleum Corp.'s No. 1 Goering, C NE SW Section 26-23-4w, had chat at 3,237-3,332 feet and has been shut in for 86,540,000 feet of gas.

Rice County

Twin Drilling Co. and Phillips Petroleum Co. made location for No. 2 Rice, SE cor. SW NE Section 3-21-6w. Gypsy Oil Co.'s No. 1 Steckell, C NE NW Section 31-19-10w, has been completed for 145 bbls. in Siliceous lime at 3,299-3,316 feet.

Sedgwick County

Continental Oil Co. and Gypsy Oil Co.'s No. 1 Lamb, SE cor. NW Section 12-26-1w, is an old well drilling deeper at 3,355 feet. Tulsa Oil Co. made location for No. 1 Linot, C SE SW Section 8-28-2. Rosenthal and others' No. 1 Pinsen, CNL SW SW Section 15-25-1e, has been completed for 63 bbls. in sand at 2,605-09 feet, total depth 2,613 feet.

Stafford County

Mid-West Refining Co. and others' No. 29 Allen, C SW SW Section 31-22-11w, made 1,065 bbls. in sand 3,534-60 feet.

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless marked otherwise)

BARTON COUNTY

Company, farm and location—	Remarks:
Skelton Oil Co.'s No. 1 Ott, C SE SE, Sec. 16-19-14w	3,000,000 ft. gas 3,483-85 ft.

DICKINSON COUNTY

Severe et al's No. 1 Lavengood, NE SW, Sec. 13-13-2	S.D. 4,752 ft.

DOUGLASS COUNTY

Hewitt's No. 1 Dodder, CWL SW SW, Sec. 7-15-18	Drlg. 480 ft.

EDWARDS COUNTY

Mid-Kansas O. & G. Co.'s No. 1 Converse, SW NE NE, Sec. 30-24-18w	Drlg. 945 ft.

ELLSWORTH COUNTY

R. Gear et al's No. 1 Sanberth, C SW SE, Sec. 29-16-9w	S.D. 50 ft.
Alyward et al's No. 1 Stratman, SE NW SE, Sec. 1-17-10w	Silicious 3,255-71 ft.; 117 bbls. 2 hrs. shut in; estimated 2,000 bbls.; completed.
Aladdin Pet.'s No. 1 Stoddenberg, C SW, Sec. 22-16-10w	Silicious lime 3,332-47 ft.; estimated 1,500 bbls. a day; completed.

FINNEY COUNTY

National Ref. Co.'s No. 1 Wells, C SW, Sec. 13-23-30w	Underreaming 4,310 ft.

HARVEY COUNTY

D. R. Louck's No. 1 Regier, SW SE NW, Sec. 9-22-3w	Spudding.
J. Liggett et al's No. 1 Vessel, NE SW, Sec. 3-23-3w	Location.
Liggett et al's No. 1 Davis, SW SE NE, Sec. 7-24-1	S.D. 2,500 ft.

KINGMAN COUNTY

Panhandle Drlg. Co.'s No. 1 Wetheral, C SE NW SW, Sec. 20-28-10w	Drlg. 1,500 ft.

McPHERSON COUNTY

Detrich et al's No. 1 Sinclair, SE SW, Sec. 25-19-1w	Drlg. 1,300 ft.

MORTON COUNTY

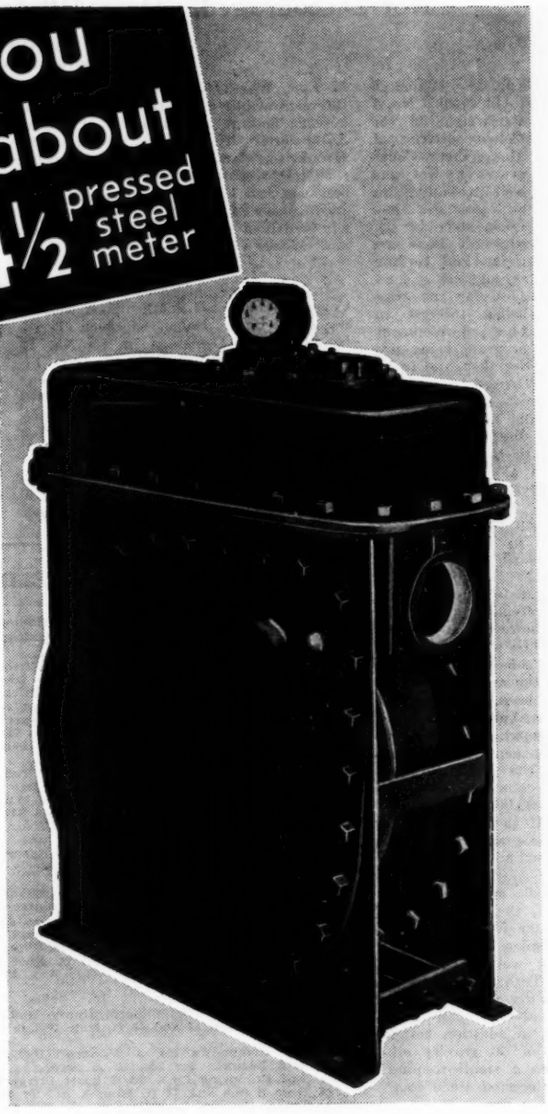
Hydraulic Oil Co.'s No. 1 State Land, NW SE, Sec. 22, 34-43w	T.D. 3,640 ft.; temp. abd.

MORRIS COUNTY

Urschel et al's No. 1 Bersuch, NW SE NW, Sec. 10-17-7	S.D. 915 ft.

(Continued on Page 82)

FACTS you should know about the EMCO 4½ pressed steel meter



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New Tests in Montgomery County Area

Wet Gas Well in Conroe District Disappointing but Operators Not Discouraged. Deep Wildcat in Willis District Planned

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Apr. 18.—Although the completion of Heep Oil Corp.'s No. 1 Cartwright in the Conroe district of Montgomery County as a wet gas well instead of an oil producer has taken some of the edge off lease activity and trading throughout that area for the time being, interest in the development program being undertaken and to be carried out probably has been increased. The fact that the well made gas, and not oil as had been looked for, was disappointing from that standpoint, but to the majority of operators it indicated a structural condition of possibly greater extent than had been anticipated.

As a gasser, the Heep well leaves operators about as much up in the air as before about the physical characteristics of the district and the location of the oil production, if such a field exists. The drilling of several strategic tests now is getting under way, however, and these probably will be watched with more than usual interest that something definite might be learned of the district.

The Heep well has been standing shut in since its completion April 11. In the meantime, a large separator has been set up pending arrangements for an outlet and reopening of the well. Production of the well is estimated as good for 10,000,000 to 12,000,000 feet of gas. Reports that the well showed some oil after blowing for a time were unverified but the gas does show a good gasoline content.

Whatever is "doped" out as to the nature of the district, the new well at least proves up an extensive gas producing area, being 1½ miles to the northeast of the discovery well, Strake Oil Corp.'s No. 1 South Texas Development Co., Theodore Slade Survey. The latter also came in making only a very wet gas but now is producing in addition better than 100 bbls. daily of 56 gravity oil, which is being run to a small topping plant which has been erected since completion of the well.

Both wells are in the same horizon, the discovery well being at a total depth of 4,991 feet while the Heep gasser has bottom at 5,078 feet. The former has an elevation of 199 feet as compared to 224 feet at the latter.

Second Strake Test

Particular interest is being centered on the second test being drilled by Strake Oil Corp. This test is approximately 2,200 feet to the south and down dip from the discovery well. Late in the week it was drilling below 1,000 feet. Heep Oil Corp. also is to drill two tests of importance. Derricks are up for both. Location of one, No. 1 J. R. Freeman, is 4,300 feet east and slightly south of the Cartwright gasser, but in the same survey (John Davis). The other, No. 1 Mrs. M. E. Roberts, William Harrison Survey, is approximately 8,100 feet to the northwest of the gasser and nearly 11,000 feet northeast of the Strake well.

Deep Wildcat

Location also was made the past week for a deep wildcat in the Willis district of Montgomery County, approximately 15 miles to the northwest of the Conroe area, this being on a block leased several years ago by Rycade Oil Co. and on which a series of core tests were drilled. Several weeks ago a deal was made with Rycade by Ed Parsons and associates of Fort Worth for the block and those interests acquired additional surrounding acreage making a total block of around 3,700 acres. The block is mostly in the Kronkrite, Carson and Foster Surveys, the first test to be No. 1 Drought, 35 feet east and 150 feet south of the northwest corner of the Kronkrite Survey. It will be drilled jointly by Gholson Brothers and Rycade Oil Corp.

Lake Barre Dome

In salt dome operations, The Texas Company completed another good well on its Lake Barre Dome, southern Terrebonne Parish, Louisiana, in its No. 12 State. This well came in flowing initially at the rate of 332 bbls. an hour through a 1-inch choke, pressure 340 pounds, but was pinched to a five-eighths-inch choke and was estimated good for 740 bbls., 2.8 per cent water, daily.

Gueydan Test

That well was the only completion of size reported on the coast for the week although a number of promising wells were due in at the close of the week. At Gueydan, Vermillion Parish, Louisiana, Pure Oil Co. is preparing to test a sand at a total depth of 3,555 feet in its No. 2 Alliance Trust Co., 1,875 feet east and 950 feet south of the NW cor., Section 34-11s-1w. A string of 9⅝-inch casing was cemented at 3,515 feet. The sand is to be tested in view of the fact that a string of casing had to be set there anyway to protect the hole from broken formations encountered above. Gueydan, a geophysically discovered salt dome, so far is unproductive.

Iowa Deep Sand

Shell Petroleum Corp.'s No. 2 Heyd, 225 feet out of northeast corner of Section 13-9s-7w, at Iowa, Calcasieu Parish, and a south offset to Magnolia Petroleum Co.'s (Vacuum Oil Co.) No. 1 Waite, discovery well of the field, has picked up the deep sand found productive by the latter well and at the close of the week was running 7-inch casing to test. The sand was topped between 6,966-71 feet with the bottom of the hole now at 6,979 feet. The discovery well, and so far only producer, is in the sand at 6,958-71 feet. It was completed last October flowing 1,000 bbls. daily of 42 gravity oil through a three-eighths inch choke, although at present it is being held to less than 200 bbls. daily. Shell's No. 1 Fontenot, east offset to the discovery well, at latest report was drilling shale below 6,200 feet.

Markham

United North & South Development Co.'s No. 1 McDonald, northeast flank extension test at Markham, has been swabbing around 10 bbls. daily from sand at 3,577-81 feet. This test, however, probably will be deepened. Claude Hamill and associates' No. 1 Northern Irrigation Co., 2,000 feet north of production on the northeast side of the dome, failed to make a showing in a drill stem test of sand at 3,504 feet. However, it is thought the sand has been mudded off for some cause and a new hole is being drilled back to the sand. The old hole was sidetracked at 1,640 feet. The sand originally showed very favorably but after setting of screen it failed to show anything. Screen then was pulled and the drill stem test made but it also failed.

Rabbs Ridge

Location has been made by The Texas Company for what promised to be an extremely interesting test at Rabbs Ridge, Fort Bend County. This test, No. 1 M. H. Gubbels, is located 100 feet out of the southeast corner of the 100-acre tract in the Samuel Kennedy Survey, which is approximately 2,400 feet to the north of production of the Rabbs Ridge (Thompson) Field, owned jointly by Humble Oil & Refining Co. and Gulf Production Co. The nearest production is from sands in a 5,200-5,400-foot horizon of the Oligocene.

Victoria County

T. B. Slick estate's No. 2 McFaddin, J. Varian Survey, Victoria County, lower Gulf Coast, has picked up the gas sand found productive in No. 1 McFaddin, located over 3 miles to the north of what is known as the McFaddin Field. This second well, 3,500 feet to the northwest of the first, made a drill stem test at 3,499-3,507 feet, showing 500 pounds pressure. It probably will be deepened in exploration for possible underlying oil sands. No. 1 McFaddin had the sand at 3,500 feet.

The Texas Company's No. 4 McFaddin, in the McFaddin district, 3 miles to the south of the Slick block, blew out while coming out of the hole at 2,840 feet to core. The well, however, killed itself when the hole bridged. Efforts are now being made to clean the hole. This well is 2,800 feet north of No. 3 McFaddin, a deep producer. In the same immediate area, The Texas Company has a gas well at 2,025 feet in its No. 2 McFaddin. The entire district has been marked by the existence of numerous sands.

Matagorda County

United North & South Development Co. finally has been able to set casing in its deep wildcat, No. 1 Stoddard, J. C. Kellar Survey, near the townsite of Buckeye, Matagorda County. This test had a showing of oil at a total depth of 7,828 feet. The casing, one of the longest strings of 6⅝-inch casing on the coast, was successfully landed at 7,765 feet and cemented.

Liberty County

Humble Oil & Refining Co. has started a second test for shallow sand or cap rock production on top the Moss Bluff Dome, Liberty County. This test, No. 10 Sterling, is 450 feet south of No. 9 Sterling, which was abandoned recently as dry in cap rock at 1,624 feet.

GULF COAST FIELDS AND WILDCATS

Week Ending April 16

BARBERS HILL—CHAMBERS COUNTY

Company, farm and location—	Remarks:
R. E. Ferrell's No. 2 Wilburn, Henry Griffith League, 215 ft. W of No. 1 in center of 45-acre tract	Drlg. salt 2,476 ft.
Gulf Prod. Co.'s No. 8 Wilburn, Henry Griffith League, W of No. 7	Drlg. shale 1,204 ft.
Humble Oil & Ref. Co.'s No. 1 Kirby, Henry Griffith League, 520 ft. N along E line from SE cor. of tract, thence 75 ft. W at right angles, thence 75 ft. N at right angles	Location.
McAlbert Oil Co.'s No. 2-B Higgins, Wm. Hodges Sur., 265 ft. from N line and 50 ft. from W line of tract	Drlg. hard sand 1,359 ft.
Mills Bennett Prod. Co.'s No. 1-B Gulf fee, Wm. Bloodgood Sur., 500 ft. E and 50 ft. N of SW cor. of "B" lease	Drlg. salt 3,745 ft.; top of salt 1,706 ft.
Mills Bennett Prod. Co.'s No. 1 E. W. Barber, Henry Griffith League, approx. 300 ft. in westerly direction from No. 3-A	Location.
Mills Bennett Prod. Co.'s No. 2 J. C. Means, Henry Griffith Sur., 300 ft. W of No. 2 in center of strip	Drlg. shale and lime 2,665 ft.
Rio Bravo Oil Co.'s No. 3 Fisher, Wm. Bloodgood Sur., 300 ft. E and 33 ft. S of NW cor. of tract	Drlg. sandy shale 2,998 ft.
Sinclair Oil & Gas Co.'s No. 12 Wilburn, Wm. Hodges Sur., 150 ft. W of No. 10 and 50 ft. N of S line	Drlg. lime rock 1,145 ft.
Sun Oil Co.'s No. 7 Chambers (W.O.), Wm. Bloodgood Sur.	T.D. 4,583 ft.; cutting and pulling liner.
Sun Oil Co.'s No. 14 J. Wilburn, Henry Hodges Sur., 150 ft. W of No. 12 and 50 ft. from N line	Drlg. salt 1,817 ft.; top of salt 1,462 ft.
The Texas Company's No. 6 Wilburn (D.D.), Henry Griffith League	Drlg. sticky shale 5,139 ft.
Texas Gulf Producing Co.'s No. 1 Scott Fitzgerald, 125 ft. from S line and 71 ft. from E line of Strip No. 1, Henry, Griffith League	Heaving shale 5,629 ft.; milling out to sidetrack 4,092 ft.
Texas Gulf Producing Co.'s No. 9-B Kirby, Henry Griffith League, 50 ft. out of SW cor. of J. M. Fitzgerald 50-acre tract and 110 ft. S of N line of Kirby tract	Drlg. salt 3,233 ft.
Texas Gulf Producing Co.'s No. 7-A Barber, Henry Griffith League, 712 ft. from W line and 225 ft. from N line of tract	Drlg. salt 3,988 ft.; top of salt 2,920 ft.

DAMON MOUND—BRAZORIA COUNTY

Intercoastal Oil Co.'s No. 9 Wisdom, S 45 deg. 312 ft. from NE cor. Lot C, Blk. 62, A. Darst Sur., and thence S 45 deg. 325 ft. in Lot A	Drlg. rock 3,332 ft.
The Texas Company's No. 2 Cave, 165 ft. NE and 55 ft. N, 45 deg. W from S cor. Lot B, Blk. 73, Wisdom Subd., A. Darst Sur.	Heaving shale 4,225 ft.; abandoned.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 15 Mayes, E. Wallis Sur., 450 ft. NE of No. 11 and 450 ft. NW of No. 14	Rig.

BLUE RIDGE—FORT BEND COUNTY

Coronado Oil Co.'s No. 3 Blakely, 200 ft. E of No. 2 in Lot 9, Blk. D, E. Drew Sur.	Spudded.
Gulf Prod. Co.'s No. 19 Luscher, Thos. Habermacher Sur., 1,650 ft. from N line and 550 ft. from E line of 490-acre tract	Drlg. hard sand and lime 4,432 ft.

ORCHARD—FORT BEND COUNTY

Gulf Prod. Co.'s No. 32 Moore, Jas. Frazier Sur., N of No. 20	Drlg. shale 3,920 ft.

RABBS RIDGE—FORT BEND COUNTY

Gulf Prod. Co. and Humble Oil & Ref. Co.'s No. 2 Booth, Samuel Kennedy Sur., 475 ft. from S line and 600 ft. E of No. 1	Drlg. rock 2,100 ft.
Gulf Prod. Co. and Humble Oil & Ref. Co.'s No. 3 Booth-Meyers, John Rabb Sur., 1,500 ft. E of No. 2	Derrick.
Humble Oil & Ref. Co. and Gulf Prod. Co.'s No. 3 Lockwood, John Rabb Sur., 1,000 ft. due E of No. 2	Drlg. sandy shale 1,813 ft.
Humble Oil & Ref. Co. and Gulf Prod. Co.'s No. 2-B Lockwood & Sharp, John Rabb Sur., 816 ft. W of No. 1-B	Drlg. shale 1,404 ft.
The Texas Co.'s No. 1 M. H. Gubbels, Samuel Kennedy Sur., 100 ft. out of SE cor. of 100-ac. tract	Location.

(Continued on Page 83)

Wildcatting Activity Showing Increase

Work Is Also Being Resumed on Tests Which Have Been Shut Down in Louisiana, Arkansas and Mississippi

By J. R. Crumpton
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Apr. 18.—A check on new drilling permits issued in this territory shows a steady increase in wildcatting activities in widely scattered districts. The resumption of drilling in several old wildcats, shut down for the past several months, also indicates that operations will be more extensively carried on during the remainder of the year.

North Louisiana reports four new wildcats on good sized blocks; two are rigging up in northeastern Shelby County, East Texas; and two new operations are reported from Arkansas and one from Mississippi.

In DeSoto Parish, North Louisiana, near the town of Grand Cane, Warren & Craig have set 10-inch casing at 102 feet and are drilling at 350 feet on their No. 1 Phillips, Section 33-13-14. The new test is in a territory adjacent to other wildcats drilled previously and all of which had shows of oil or gas. It is about 1½ miles southwest of J. W. Clark's No. 1 Tidwell, Section 22-13-14, drilled in 1930, and which had several shows of oil and gas around the 3,000-foot level. The Clark test failed to make a well at that depth and was drilled to 3,655 feet where it was abandoned as dry. Pelham & Bundy's No. 1 Rhodes, Section 32-13-14, less than 1 mile west of the present test, was completed in October, 1930, flowing by heads 12 bbls. of oil and 15 bbls. of salt water from 3,009 feet. The well is still flowing about the same amount of fluid as when completed.

The location for the Warren & Craig test was made by the same geologist who made the location for the Danciger Oil & Refining Co.'s No. 1 Harris, Section 11-13-14, drilled in 1923 to a depth of 3,140 feet. This test was completed in June, 1930, by Odell & Lawton with an estimated flow of 20,000,000 feet of gas and a heavy spray of salt water from 3,150 feet. That this area will be thoroughly tested in the near future is indicated by reports that the Shreveport Oil Corp. will drill a test on the Sutherlin tract, about 4 miles from Warren & Craig's No. 1 Phillips, and that Pelham and others will drill another test on the Rhodes tract.

Two Other Wildcats

Two important wildcat tests are rigging up to drill on a 14,000-acre block in the northwestern part of Natchitoches Parish near the Sabine Parish line. W. M. Coates will drill the two test simultaneously, one of which, his No. 1 Ross-Olive, is located in Section 10-9-10, and his No. 1 Frost-Johnson Lumber Co. is located in Section 13-9-11. The former test is about 3 miles north of the town of Marthaville, and the latter is about 4 miles east and north of the oil and gas wells completed in the new Spring Ridge area of Sabine Parish by the Langbridge Oil Co. and Frank Foster, Inc.

W. M. Coates, now operating as the Southland Drilling Co., during the past year drilled No. 1 Collins, Section 28-9-10, in the town of Marthaville, to a total depth of 4,080 feet. A drill stem test near the bottom of the hole developed some oil with salt water, and the well was junked and abandoned. It is the opinion of operators of this district that this well was located on the southern extremity of a structure that has the appearance of the southeastern shore line of the Sabine uplift. In Red River Parish, C. F. Davis has obtained a permit to drill his No. 1 Pierson in Section 12-14-11. This test is located on a block of approximately 2,000 acres.

Shelby County Activity

The eastern part of Shelby County, East Texas, near the Louisiana line, continues to get a good play. E. L. Chapman has derrick up on his No. 2 Pickering Lumber Co., D. S. Height Survey. The new wildcat is 1½ miles southeast of the same operator's No. 1 Pickering, completed last year with an estimated flow of 15,000,000 feet of gas from the total depth of 3,864 feet. This part of Shelby County has recently come into the limelight with the completion of the Oil News' No. 1 Pickering, G. H. Patterson Survey, as a 50-bbl. pumper with some salt water from the shallow Nacatoch formation around the 1,500-foot level. Fuller and O'Brien Brothers' No. 1 Frost-Johnson, Aaron Castleberry Survey, another test now drilling in this area, failed to encounter even a good show at this level during the past week, and is drilling deeper. The general opinion is that the shallow horizon will not pay off in commercial quantities in this area, but there is a good chance of finding both gas and oil in the Woodbine or in the Glen Rose of the upper trinity. Sedberry and others are ready to spud in on their No. 1 Pickering, Jane Stoddard Survey, in the vicinity of the Oil News' well, but it is not known at this writing whether it is to be a shallow or deep test.

ARKANSAS

Two new wildcats are rigging up in Arkansas, and a semiwildcat in the gas area of Crawford County has been located by the Ozark Natural Gas Co. The latter test is listed as No. 1 Jones in Section 32-9-31. In Ashley County, D. S. Brooks, Inc., is moving in rig on its No. 1 Crossett Lumber Co., Section 31-15s-6w. The Pigeon Hill Oil Co. is rigging up on No. 1 Union Sawmill Co. in Section 19-17-12, Union County.

Miller County has three active operations, all of which were tests started during the past year and shut down for several months. Fitzwater and others' No. 1 Black, Section 33-15-26, is coring limy shale at 2,600 feet, and C. E. Litchfield is coring broken lime at 2,750 feet in his No. 1 Hervey, Section 2-15-26. This well was originally started by the East Texas Oil & Gas Co. and drilled to 890 feet. Both the Fitzwater and Litchfield tests are in the vicinity of the Lentz wildcats, drilled about two years ago, one of which produced a quantity of heavy crude oil from around 3,000 feet. In the southern part of Miller County, W. E. Noel and others have resumed drilling on their No. 1 Dickson heirs, Section 11-20-27, and are drilling at 2,350 feet. This wildcat has been shut down at 1,955 feet since August of last year. The Lion Oil Refining Co.'s No. 9-A Hayes, a deep test in Section 4-16-15, in the Smackover Field, continues to experience trouble. The drill stem has been stuck in rock salt at the total depth of 7,255 feet for several weeks, and during the past week, was twisted off about 4,400 feet from the bottom. The crew is now trying to fish the remainder of the drill stem from the hole. The Southern Production Co.'s No. 1 Wingfield, Section 16-19-15, another wildcat in Union County, is drilling in red beds at 3,240 feet.

Seven Completions

There were seven completions in the division during the past week resulting in one oil well, one gas well and five dry holes. The oil well was in the Urbana Field of Union County, Arkansas, Wilson & Chapman's No. 1 K. D. Parker, Section 3-18-13, flowing 300 bbls. daily by heads from a total depth of 3,581 feet. The Hinds County area in the Jackson Field of Mississippi furnished the only gasser reported. The well, Belhaven College's No. 1 fee, Section 35-6n-1e, was one of the best wells in the field, gauging 45,172,000 feet from 2,394 feet. Belhaven College is a school for girls located within the city limits of Jackson and is the second college campus well to be brought in in this area, Millsaps College, a school for boys, having completed No. 1 fee as a good producer several months ago. The latest gasser was financed and given to the school by B. B. Jones, an independent operator.

The Zwolle Field of Sabine Parish furnished three of the dry holes, two of which were close to production and one a semiwildcat northwest of the proven area. Hawkins & Antoon's No. 1 Newton, Section 1-7-11, has been waiting for standard rig to pump for several months, but was abandoned as a noncommercial producer at 2,620 feet. In the same section, Ben Merritt, trustee, abandoned his No. 2 Byrd at 2,579 feet. This operator's No. 1 Byrd, completed in May of last year as a good flowing well, was a 1½-mile extension to the eastern part of the field. The Root Refining Co.'s No. 1 Peterson, Section 34-7-13, northwest of the field, was dry and abandoned at 2,850 feet. This well, on a 600-acre block, was taken over recently at 2,443 feet from T. M. LeGrand.

Loanoke County, Arkansas, furnished a duster with the abandonment of Frank Melat and others' No. 2 Fletcher, Section 13-1-8, at 2,242 feet. The Drillers Oil & Development Co. set a short string of 4½-inch casing at 2,138 feet in its No. 1 Haynie, Section 1-17-16, Union County. A test developed salt water with some oil and the well was abandoned at 2,145 feet. This is the second test drilled in this immediate vicinity by these operators.

In Lamar County, South Mississippi, Stauffer & Kouri are drilling at 550 feet on their No. 1 Bond, Section 18-2n-14w. This wildcat is located on a large block of acreage near the town of Purvis. In Sharkey County, the United Gas Public Service Co.'s No. 1 Lenhart, Section 14-14n-6w, is drilling at 3,056 feet.

Daily Average Runs

There was a net increase of 215 bbls. in the daily average runs from the fields of North Louisiana and Arkansas during the week. The daily average runs from the several pools were:

NORTH LOUISIANA

	Bbls.
Caddo, light	5,460
Caddo, heavy	2,075
Cotton Valley	540
DeSoto and Red River	2,000
Elm Grove	390
Haynesville	4,475
Holly	310
Homer	2,890
Pleasant Hill	295
Sarepta-Carterville	825
Urania	3,645
Zwolle	5,475
Total North Louisiana	28,380
Total previous week	28,170
Increase	210

ARKANSAS

	Bbls.
Champagnolle	1,890
El Dorado	3,140
Lisbon	525
Nevada	1,225
Smackover, light	2,925
Smackover, heavy	23,675
Stephens	640
Urbana	980
Total Arkansas	35,000
Total previous week	34,995
Increase	5
Total both states	63,380
Total previous week	63,165
Increase	215

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

AVOYLLES PARISH

Company, farm and location—Remarks:

Stauffer & Eshleman's No. 1 Caruth, Sec. 40-1n-7e ..... Derrick.

BOSSIER PARISH

Dr. W. N. Hankin's No. 1 Newell, 300 ft. S and W, NE cor., Sec. 12-19-11 ..... S.D. 1,890 ft.

CADDO PARISH

Louana O. & G. Co.'s No. 1 Hammock, Sec. 32-19-6, 660 ft. N and W, SE cor. ..... Comp. 12,500,000 ft. gas 2,763 ft.

Pyramid O. & G. Co.'s No. 2 Breard, Sec. 9-8-15, 660 ft. S, 1,980 ft. W, NE cor. Sec. ..... Set 10-in. 98 ft; drlg. 1,450 ft.

CALDWELL PARISH

Carter Bell's No. 1 Taylor, 150 ft. S, 150 ft. E, NW cor. NE SE, Sec. 17-14-4 ..... Arranging to set 6-in. csg; T.D. 2,488 ft.

Hudson et al's No. 1 Burton, Sec. 35-12-2e ..... S.D. 2,950 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 26-9-6 ..... T.A. 3,097 ft.

(Continued on Page 80)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

CADDO PARISH—PINE ISLAND

Company, farm and location—Remarks:

Calatex O. & G. Co.'s No. 1 Scott, Sec. 5-16-16, 1,320 ft. E, 300 ft. N, SW cor. ..... Rigging up.

Simplex Oil Co.'s No. 1 Youree-Glassell, 500 ft. N and E, C, Sec. 13-20-15 ..... S.D. 2,275 ft.

OUACHITA PARISH

Carbon Cons.' No. 7 Guthrie, Sec. 50-20n-4e, 5,263 ft. N, 7,475 ft. W of cors. of Secs. 25, 26 and 49, in Sec. 50 ..... Location.

SABINE PARISH—ZWOLLE

O. J. Baird's No. 2 Duggan, Sec. 14-7-11, 200 ft. S and E from cen. Sec. ..... Drlg. 2,020 ft.

Hawkins & Antoon's No. 1 Newton, Sec. 1-7-11 ..... Abd; will not pump 2,620 ft.

Hudson & Bird's No. 1 Walden, 480 ft. N, 300 ft. E, SW cor. SW NE, Sec. 26-8-11 ..... S.D. 2,454 ft.

Zeke Lohman's No. 1 McCormick, 660 ft. E, 330 ft. N, SW cor. NE SW, Sec. 2-7-11 ..... Testing 2,630 ft.

Ben Merritt, tr.'s No. 3 Byrd, 100 ft. E, SW cor. NW SW, Sec. 1-7-11 ..... Drlg. 1,630 ft.; set 10-in. 100 ft.

(Continued on Page 80)

Much New Drilling in Southwest Texas

Operators Especially Active Along Balcones Fault Zone. May Have Two New Edwards Lime Pools in Caldwell County

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Apr. 18.—Two possibilities for new Edwards lime pools in Caldwell County confront the industry this week where one faced it last week. C. J. Webster Oil & Gas Co.'s No. 1 McCrory, midway between the Branyon and Buchanan Pools in Caldwell County, when 1 foot in the Edwards lime at 2,278-79 feet covered the ditch and slushpit with oil. Casing was set late in the week without making a drill stem test. The showing is good live oil and taking into consideration the dry holes and the fields at both ends of the area there is opportunity for a pool of around 4 to 5 miles in length. The old Luling Pool is 8 miles long and the Bruner Field about 7 miles long, by way of comparison.

In the meantime, Bob Rose's No. 1 Pierce, some distance to the southwest and in an entirely different line of play which for the past two weeks, with a good showing of oil at 2,114 feet, has been wrestling with drill stem stuck in the hole, succeeded in getting it out about the middle of last week and started to set casing.

There is general agreement the Webster well went through the dobie and the Edwards lime cap and the core has been identified as without doubt Edwards. The interval between the top of the Austin chalk at 2,008 feet and the top of the Edwards lime at 2,278 feet, however, is less than normal and this fact accounts for it being reasonably high on the Edwards lime. The Georgetown seems to have been absent due to its cutting the fault. The depth corresponds pretty well with the depth to the Edwards in the old Luling Field which is approximately 8 miles southwest of the Webster well.

Extension of Luling Fault

The idea of picking up an extension of the Luling fault line has been prevalent ever since the Luling Field came in. The Luling Field on the southwest, the Branyon Pool 6 miles northeast of it, then the Webster test, next the Buchanan Pool and next the Dale Field, are all on a line with each other. The Dale Field produced from the Serpentine at around 1,700 to 2,000 feet and the Buchanan Pool produces from Serpentine at about the same depth. The Branyon Pool consists of only two wells producing from a crevice in the chalk, the oil doubtless coming from Edwards and the old Luling Field produces from Edwards at around 2,150 to 2,200 feet.

Tests have been drilled in the area where the Webster test is located, but have always got too far to the northwest and on the downthrow side of the fault or too far to the southeast and too far away from the fault.

Casing started out to the Webster test last week and was expected to all be in the hole and set by Saturday and the drilling in and testing was expected to take place the middle of this week.

In the case of Bob Rose's (Cole & Moseley) No. 1 Pierce, which had drill stem stuck in the hole for a couple of weeks, the casing was got out the middle of last week and casing was set by the last of the week. It, too, will drill in and test about the middle of this week. When it first went into the showing of oil it made considerable of a flow with drill stem in the hole, the oil running out on the ground. Of about four days' flow there was picked up about 1,000 bbls. and later while pulling on the drill stem it broke through the bridge and flowed several heads.

Probably a Producer

The last formation identified is chalk topped at 2,050 feet with bottom of the hole 2,114 feet and hence it is classed as a chalk well, but may be producing from a crevice and the oil coming from the Edwards lime. There are some difficulties therefore in guessing at the probable production and considerable uncertainty but it seems pretty likely to make a producer of importance.

Bob Rose also acquired an interest in the Meyer Exploration Co.'s No. 1 Walker, which is a mile to the northeast and along the same line of faulting and this has been turned to Cranfill-Reynolds, who have started to deepen it. It was standing at 160 feet. Activity in this area is waiting the final test of the No. 1 Pierce. Empire Gas & Fuel Co. has a lease on the Ussery tract next southwest from the Pierce tract and right in line for the play and a producer in the No. 1 Pierce would call for an offset. The Texas Company, Sun Oil Co. and Smilock Oil Co. also have leases and Shell has a lease off to the west.

This proposition is midway between the Salt Flats or Bruner Field on the southeast and the Luling Field on the northwest being approximately 2½ miles from either.

Much New Activity

There is considerable additional new activity along the Balcones Fault zone outside of these two possible new pools. M. O. Rayor, who drilled two tests on the Dunlop property a half mile southwest of No. 1 Pierce and got wells producing a small amount of oil from formations above the Edwards lime, has moved his rig 5 miles northeast of No. 1 Pierce and is setting up to drill in the Samuel Shupe Survey.

South of Seguin in Guadalupe County where Tidal and others have done considerable work, J. E. Clark is starting No. 1 R. Drummer in the Francisco Caravajal Survey several miles due south of Seguin. The area compares somewhat with the territory where Webster is drilling No. 1 McCrory, in that it is recognized that there is a structure and faulted condition, though tests thus far drilled have failed to get properly located on the structure.

This test and the Sal-Mar Oil Corp.'s No. 1 Pfullman in the Lewis Bollinger Survey east of Seguin, which is rigging up, are both drilling on the theory of picking up production in the Edwards under similar conditions to the Edwards lime fields to the northeast.

Northern Duval County

Smith & Capps bailed No. 1 Duval County Ranch Co. in Survey 576, 2 miles southwest of the Government Wells extension pool to 200 feet of the top of the liner and it made considerable gas, several hundred thousand feet, and was a little disappointing. Total depth was 2,355 feet and it has started to deepen and at last reports was at 2,379 feet, with no water showing and still in sand. On the north end of the Government Wells extension field Humble Oil & Refining Co.'s No. 1 Paul White had a similar experience and after deepening considerably came in for a big oil well.

Smith & Capps had erected storage and also make location for No. 2 in Survey 574 about a quarter of a mile northeast of No. 1 and erected the derrick.

Several other tests are getting started southwest of the Government Wells extension at greater distance from production but none is deep enough to be interesting. Leases are about to expire on some of the tracts both southwest of the Government Wells extension and also north of the Government Wells Pool and this is responsible for some hurried drilling. The Texas Company has only a short time in which to prove production north of the field and is drilling in Survey 96. The leases, it is understood, have been top leased by another major company.

Outside of Duval County, activity in the Laredo territory is centered mainly in Zapata County and extending on down to Starr County. They seem to be playing the idea that there will be some more pools found in addition to those in Starr County and several locations have been made for tests extending up through Starr and Zapata.

O. W. Killam is starting a test on the Barrocito ranch in the J. V. Borrego grant, which, however, is on a lease he has been working on for some time and has no connection with the new play. McGinley Oil Corp. is building a road to a wildcat test northeast of the Jennings gas field in Survey 250 and in the southern part of Zapata County Savage and others have leased the Munos 2,000-acre tract in the northeast end of Porcion 18 and will start drilling soon.

New Wildcat Play

One of the newest wildcat outbreaks is in western and northwestern Starr County. The Texas Company a few years ago drilled No. 4 Guerra in the southern portion of Share 305-D of Porcion No. 67, a little south of the center of the porcion and about 5 miles northwest of Roma and about 1 mile east of the Rio Grande. It is still flowing about 20 bbls. of high gravity oil a day. It never was a big well. Total depth is 3,590 feet. On the north end of Porcion 70, 8 miles northeast of it, there is a shallow well that has been oozing some oil for years and parties have leased 500 acres around it on a contract to drill five shallow tests.

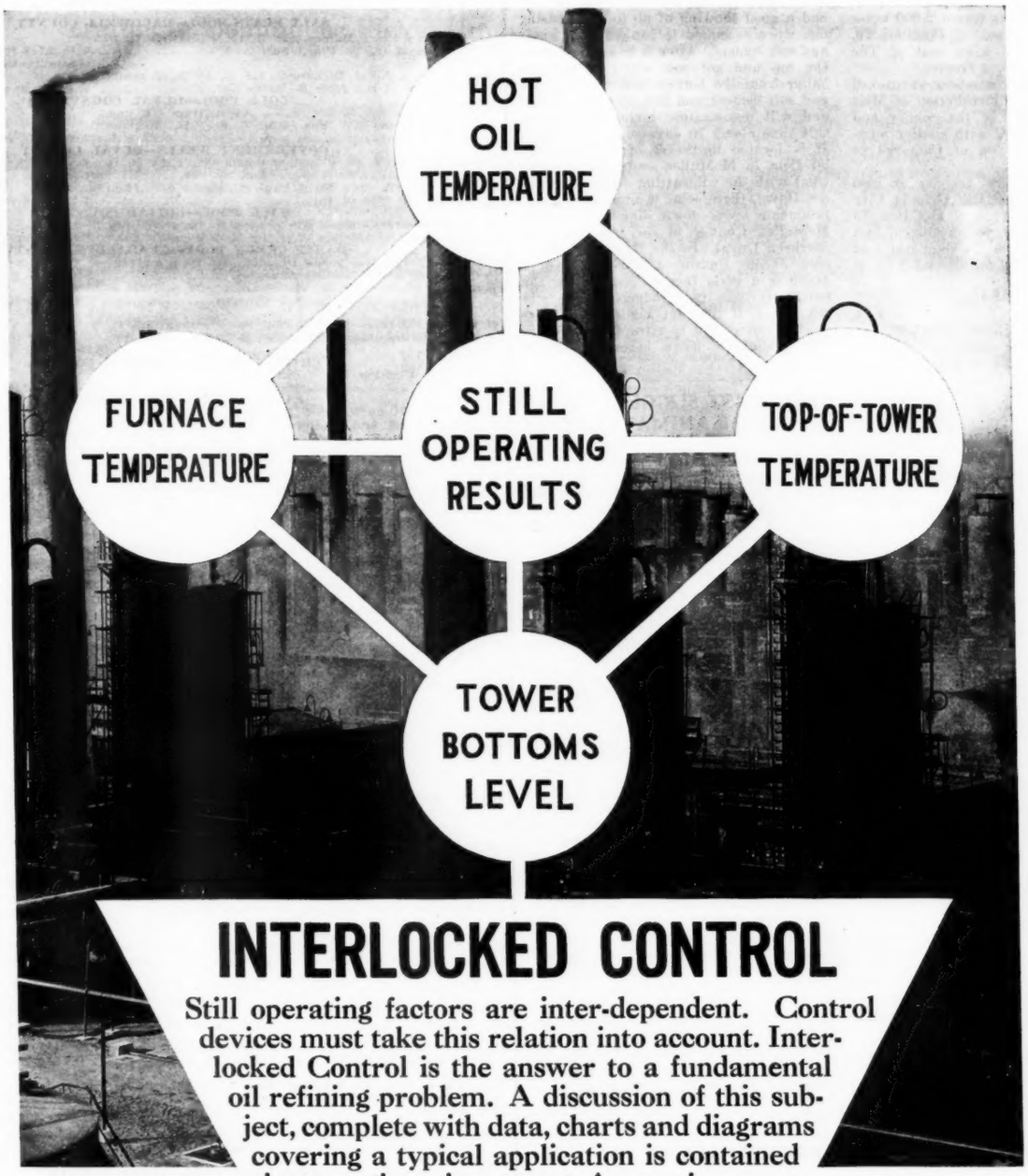
Just to the north of that E. H. Stick-

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

Week Ending April 16

Company, farm and location—	Remarks:
ATASCOSA COUNTY	
American Central Oil Co.'s No. 2 Mary McConnell, 150 ft. W of E line, 300 ft. S of No. 1, Blk. 138, W. C. M. Baker Sur., 3 miles W and 6 miles S from Somerset	T.D. 1,660 ft.; standing.
Glen Mathis' No. 2 Mrs. C. Martin, 100 ft. SE of No. 1	T.D. 2,980 ft.; resumed drlg.
BASTROP COUNTY	
I. L. Champion's No. 1 Owens, 500 ft. to SE line, 600 ft. to SW line of 628-ac. tract, Isaac Cosner Sur.	Location.
E. R. Marts and W. J. Beavens' No. 1 R. L. Carter, 450 ft. from NE line, 150 ft. from NW line of 100-ac. tract in George J. Glasscock Sur.	T.D. 1,200 ft.; drlg.
Sun Oil Co.-Humble Oil & Ref. Co.'s No. 1 Powers, 400 ft. of N and E lines of Blk. 197, Bastrop town tracts	T.D. 4,139 ft.; abnd.
BEE COUNTY	
Alexander et al's No. 1 McFall, 3 miles S Skidmore	T.D. 2,100 ft.; abnd.
Humble O. & R. Co.'s No. 1 Laura Thompson, 6,360 ft. from N line, 15,100 ft. from W line of tract in Garrett Roache Sur., S part of county	T.D. 5,310 ft.; washing down.
J. L. Mauldin's No. 1 Kimball, 300 ft. NE of Grayburg Oil Co.'s No. 1-A Kimball in S. Winship Sur.	Location.
Texas Gulf Producing Co.'s No. 1 Webb Hearn, 1,000 ft. N, 43 degrees E, thence 300 ft. NW at right angles from Huriburt's No. 1 Wood in P. T. Irrigation Co. Sur.	Location.
BELL COUNTY	
J. W. Riley's No. 1 W. S. Chaffin, in M. Griffin Sur.	T.D. 450 ft.; S.D.
Jas. Scroggin's No. 2 Warrick, Ingram Sur.	T.D. 1,432 ft.; fishing.
BEXAR COUNTY	
Amsden-Ingersoll-Miller's No. 1 Strumberg, 450 ft. to W line, 1,020 ft. to N line of tract, 12 miles SW of San Antonio	T.D. 810 ft.; S.D.
Eckert et al's No. 1 Edwards, 150 ft. to N and W lines of farm in Martinez Sur.	T.D. 1,490 ft.; standing.
Callahan Final Oil Co.'s No. 1 B. H. Buck, 900 ft. to E line, 3,200 ft. to S line of farm, in J. M. McGamley Sur.	T.D. 650 ft.; abnd.
Jones & Voltz' No. 1 Bonkowsky, 12 miles E of San Antonio	T.D. 907 ft.; standing.
Dr. Ewell Neil's No. 1 J. Watson, 500 ft. from W line, 1,700 ft. from S line of B. Martinez Sur.	T.D. 2,495 ft.; in Edwards, dry.
Schneider, Rees et al's No. 2 Claussen, 12 miles NE of San Antonio	T.D. 1,330 ft.; S.D.
S. W. Blount's No. 1 S. A. Land Co., I. Perez Sur., 1,000 ft. to N line, 450 ft. to W line of tract	T.D. 520 ft.; abnd.
BROOKS COUNTY	
Allen & Morris' No. 1 Lasater, NW part of county, 450 ft. to NE line, 7,325 ft. to SE line of 962-ac. tract	Rigging up.
Ed East's No. 1 A. Garcia, 600 ft. from N and E lines of 2,168-ac. tract in SW part of county	T.D. 85 ft.; set surface csg.
CALDWELL COUNTY	
Cole & Moseley's No. 1 Pierce, 150 ft. to NW and SW lines of tract, Solomon Seal Sur.	T.D. 2,114 ft.; set csg.
George Sullivan and Shell Petroleum Corp.'s No. 1 Plinsoil, 2,800 ft. to SW line, 300 ft. to NW line of tract and survey in M. Dennis Sur.	Bldg. derrick.
Kistler, Stivers & Hendrick's No. 1 D. Carter, 400 ft. from NW line of Sur., 300 ft. NE of Creek in I. Allen Sur.	T.D. 1,485 ft.; standing in chalk.
Meyer's No. 1 G. C. and W. Walker, Solomon Seal Sur.	T.D. 250 ft.; drlg.
C. J. Webster Oil & Gas Co.'s No. 1 McCrory in John Neil Sur.	T.D. 2,279 ft.; in Edwards, set csg.
M. O. Rayor's No. 1 Kruez Bros., 450 ft. N, 150 ft. W of SW cor. of J. P. McCarley Sur. in Samuel Shupe Sur.	Moving in.
COLORADO COUNTY	
Coyle-Concord Oil Co.'s No. 1 Stewart Nelson in L&G.N. Sur. No. 43	Rigging up.
DEWITT COUNTY	
Pat Armstrong's No. 1 E. T. Clark, 2,000 ft. S of Simms-Republic's No. 1 Clark in Jose Santos Sur.	Moving in.
DUVAL COUNTY	
John F. Camp's No. 1 Weil, 900 ft. NW and 150 ft. NE of cen. of Sur. No. 570	T.D. 1,500 ft.; drlg.
Frank Gravis et al's No. 2 Schallert, 425 ft. to E line, 150 ft. to S line of Blk. 10, Cain & Smith Subd. "A", Sur. No. 255	T.D. 1,610 ft.; standing.
French Oil Corp.'s No. 1 Flores in Survey 731, 1,000 ft. N, 25 degrees W of Sun Oil Co.'s No. 1 Flores in Survey 730	Moving in rig.

(Continued on Page 82)



INTERLOCKED CONTROL

Still operating factors are inter-dependent. Control devices must take this relation into account. Interlocked Control is the answer to a fundamental oil refining problem. A discussion of this subject, complete with data, charts and diagrams covering a typical application is contained in an engineering report. A copy is yours on request.

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ney has a 60-day drilling obligation on Surveys 338 and 339 and some adjoining acreage and Worth B. Andrews and W. A. Moncrief are on a deal for a block to drill a test on Survey 344 at the north end of Porcion No. 75. Miller I. Shaw leased 15,000 acres out of Porcions 109, 110 and 111 in the northwest corner of Starr County.

Ryals Oil Corp. has leased 2,900 acres including Share 26 out of Porcions 70, 71 and 72, about 2 miles east of The Texas Company's No. 4 Guerra.

All of the porcion numbers mentioned above are of the old jurisdiction of Meir in the western part of the county and are not to be confused with similar numbers in the jurisdiction of Camargo to the east.

Quite a lot of new activity is also spreading around the Rio Grande City play where the new Heard and Heard's No. 1 Goodrich, reported completed last week, has been put on 24-hour test and made 200 bbls. with no water, using a new flow device.

O. W. Killam is unloading rig and will drill on the southern end of Porcion 84 and north of the highway and south of the railroad tract 3 miles southeast of the Heard & Heard well and in a line with it and the Los Olmos shallow field which is 8 miles northwest of the Heard & Heard test.

R. A. Hoffman, whose rig drilled No. 1 Goodrich, has a 53-acre block west of the well and a 40-acre block southeast of the well and will drill on one or the other at once.

R. E. Johnson, who started No. 1 Goodrich and later turned the deal to Heard & Heard, is to drill on a tract of 30 acres north of Rio Grande City. Also Heard & Heard are to drill on a tract a mile or more west of their No. 1 Goodrich.

They all seem to be working on the idea that there is some connection between the No. 1 Goodrich and the Los Olmos shallow pool, geologically.

Pettus Field

Pettus received new impetus last week when Henderson Coquat's No. 1 Mauldin, located between the townsite and the southwest extension, being about half a mile from either, came in a 200-bbl. well at 3,889 feet with top of sand at 3,883 feet. It has 100 pounds on the tubing and 400 pounds on the casing. It was supposed there was a cross fault between the townsite production and the extension. Production in the extension is at 3,900 feet and in the townsite pool at a little below 3,900 feet.

United Production Co. during the week got the sand in its No. 41 Ray at 3,933-44, a half mile east of the townsite and located between two producers. Its No. 40 Ray, which would extend the field to the northeast should be in the sand soon. It was last reported below 3,600 feet.

Stanolind and Camp

The test of most interest in the coast counties is the Stanolind Oil & Gas Co. and John R. Camp's No. 1 King in western Nueces, which was all ready to bail over the last week end with total depth 3,899 feet. Officials of the Stanolind came down to see the test.

Operators are also watching the shallow test of Jacob, Buzzini & Pickett, No. 1 Leonard Jacob, in northeastern McMullen County. Total depth is 962 feet. It had a good showing of oil and set casing but when it bailed it got oil, salt water and soft cement. After it had bailed from the top and got salt water it ran the bailer from the bottom and got oil, mud and soft cement and has now recemented and will test against giving the cement this time about 10 days in which to set. It is located northeast of the Calliham oil field in McMullen and ties in somewhat with the wildcatting down in northern Duval, there being a number of minor producing spots down diagonally across McMullen County to the production in northern Duval. In the Reynosa outcrop area Jacob, Buzzini & Pickett's No. 1 Jacob is a little farther removed to the northwest than the production in northern Duval. If they get a good well, however, it cannot fail to attract attention to the possibilities down across McMullen County.

GEOLOGIST SUGGESTS USE OF ANIMATED MAPS

Dr. George C. Branner, state geologist for Arkansas, addressed a meeting of the Tulsa Geological Society outlining a plan for presenting historical geology by the means of animated maps. A short film of animated maps was shown to illustrate the idea.

Doctor Branner explained that to the layman, and to many geologists, engineers and others technically trained, the time periods represented by the various geological eras are not clearly understood. The names given to these eras do not indicate the relative length of time covered by each and it is proposed that some unit of time be selected which can be translated into terms that are of relative value in motion picture.

Animated pictures are familiar to everyone and it is Doctor Branner's idea that picture of the growth of the earth could be built up in such a way as to definitely show the formation of land masses, the invasion of seas with their subsequent withdrawal and all other features of paleogeography. It is even possible that the films show animal life of the various periods and other distinctive features that would give them greater interest to the layman and student.

To make the films it will be necessary to enlist the aid of a number of geologists, and at this time Doctor Branner is particularly anxious to start work upon a film covering the history of the Mid-Continent area. He would like to have anyone interested in assisting him in this project write him in care of the Arkansas Geological Survey, Little Rock, Ark.

SOUTHWEST TEXAS PROVEN AREAS

Week Ending April 16

COSDEN POOL—BEE COUNTY

Company, farm and location— Remarks:

Henderson Coquat's No. 1 Leroy Roberts, 300 ft. from W line of lease, 300 ft. N of NE cor. of Gremmel tract ..... Rigging up.

NORMANN POOL—BEE COUNTY

Gulf Coast Oil Co.'s No. 1 Hicks, 300 ft. S of Nichols Oil Co.'s No. 1 Hicks ..... Rigging up.

PETTUS POOL—BEE COUNTY

Henderson Coquat's No. 2 Mauldin, 647 ft. to S line, 150 ft. to W line ..... T.D. 3,886 ft.; comp. flowing 200 bbls. oil daily.

United Prod. Co.'s No. 40 Ray, 2,990 ft. SE along the SW line of T. Thomas Hanson Sur. from SW cor. thence 2,346 ft. NE at right angles ..... T.D. 1,352 ft.; drlg.

United Prod. Co.'s No. 41 Ray, in Geo. A. Kerr Sur., 660 ft. NE of No. 33 Ray and 660 ft. SW of No. 31 Ray ..... T.D. 2,590 ft.; drlg.

COOKSEY POOL—BEXAR COUNTY

Chiquita Oil Co.'s No. 2 Cooksey, 480 ft. from E line, 330 ft. from S line of tr. in J. W. Rialls Sur. ..... Location.

Chiquita Oil Co.'s No. 1 Dan Kosub ..... T.D. 1,579 ft; set csg.

L. W. Stieren's No. 1 Annia Terrell, 150 ft. from N and E lines of lease in J. Martinez Sur. ..... T.D. 510 ft.; drlg.

ECKERT POOL—BEXAR COUNTY

Alamo Nat. Gas Co.'s No. 3 J. H. Gembler, 180 ft. from N and E lines of tr. in A. Manachaca Sur. 51.. T.D. 1,216 ft.; drlg.

F. H. Eckert & Son's No. 9 Sandemer, 150 ft. to N and W lines ..... T.D. 710 ft.; comp. 7 bbls.

F. H. Eckert & Son's No. 1 Louis Brehm, W offset to No. 3 John J. Brehm ..... Location.

F. H. Eckert & Son's No. 10 Sandemer, 400 ft. E of No. 9 ..... T.D. 310 ft.; drlg.

Gatlin Oil Co.'s No. 11 I. A. Beck, 700 ft. from SE line, 156 ft. from SW line of tr. in J. Montes Sur. .. T.D. 495 ft.; drlg.

Gatlin Oil Co.'s No. 11 I. A. Beck, 700 ft. from SE line, 156 ft. from SW line of tr, in J. Montes Sur. .. T.D. 495 ft.; drlg.

W. R. Swearingen's No. 8 Halbadier in Perez Sur. ..... 675 ft.; comp. 8 bbls.

W. K. O. & G. Co.'s No. 3 Strunk, 300 ft. E of No. 2 ... T.D. 700 ft.; comp. 8 bbls.

W. K. Oil Co.'s No. 1 Strunk, 150 ft. S of N line, 150 ft. W of E line, John Grant Sur. ..... T.D. 710 ft.; comp. 7 bbls.

W. K. Oil Co.'s No. 2 Strunk, 150 ft. from S line, 1,051 ft. W of E line, Juan Mantes Sur. ..... T.D. 705 ft.; comp. 7 bbls.

W. K. Oil & Gas Co.'s No. 4 Strunk, 300 ft. E of No. 3 Strunk ..... T.D. 700 ft.; set csg.

SALT FLATS POOL—CALDWELL COUNTY

Joe Bruner's No. 1 Malone, 150 ft. to N line, 750 ft. to W line of tr., A. Floyd Sur. ..... T.D. 2,788 ft.; flowing 20 bbls. dly. into tanks.

John Storey's No. 1 Dickerson, 150 ft. to N of center of S line of tr., John R. Rains Sur. ..... Rigging up.

COLE POOL—DUVAL COUNTY

Cole Pet. Co.'s No. 75 Benavides, 365 ft. from NE line, 150 ft. from NW line, Blk. 8, Sec. 18, Mariana Arispe grant ..... T.D. 4,410 ft.; drlg.

GOVERNMENT WELLS—DUVAL COUNTY

Duval Oil Corp.'s No. 9 Bishop Cattle Co., 2,216 ft. to W line, 2,221 ft. to N line of Sur. No. 135 ..... Location.

Humble O. & R. Co.'s No. 3 Paul White, 1,650 ft. from S and W lines of sur. ..... T.D. 2,306 ft.; comp. 500 bbls.

SLICK POOL—GOLIAD COUNTY

T. B. Slick estate's No. 2 Allen, 1,660 ft. from NE line, 330 ft. from NW line of tr. in Obid Marshall Sur. Rigging up.

DARST CREEK POOL—GUADALUPE COUNTY

John R. Camp's No. 2 Sue Denman, 300 ft. S and 300 ft. W of No. 1 Sue Denman ..... Set surface csg.

Humble O. & R. Co.'s No. 4-C Denman, 650 ft. from E line, 600 ft. NE of No. 3-C Denman ..... T.D. 2,549 ft.; comp. 25 bbls. hourly.

Humble Oil & Ref. Co.'s No. 5-C Sue Denman, 525 ft. from E line, 600 ft. N of No. 4-C, Wm. Arrington Sur. ..... Derrick.

CHITTIM POOL—MAVERICK COUNTY

Texas Gas Utilities' No. 8 Chittim, 24 ft. S of No. 7 Chittim ..... T.D. 5,100 ft.; standing.

SAXET FIELD—NUECES COUNTY

Gulf Coast Oil Co.'s No. 1 Perkins and LeGasse, 330 ft. from N and E lines of 245-ac. tr., Sec. 26, Shepard Subd. ..... T.D. 2,852 ft.; drlg.

Houston Oil Co.'s No. 1 McGregor, 150 ft. from E line, 330 ft. from S line of 100-ac. tr. in Sur. 311 ..... T.D. 4,265 ft.; flowing 160 bbls. daily.

Kepley et al's No. 1 Speer and Hocker, 200 ft. from E and S lines of 850-ac. tr., in Speer and Driscoll lands ..... Spudded in.

Rutherford Drlg. Co.'s No. 1 Hunter, 150 ft. from S and W lines of 10-ac. tr. ..... T.D. 2,200 ft.; drlg.

Saxet Oil Co.'s No. 5 Well, 3,041 ft. to N line, 333 ft. to W line ..... T.D. 2,500 ft.; standing.

Saxet Oil Co.'s No. 6 Dunn, 600 ft. S of No. 5 Dunn, 4 miles from Corpus Christi ..... T.D. 6,713 ft.; drlg.

ARANSAS POOL—SAN PATRICIO COUNTY

Atlantic Oil Prod. Co., to deepen to 6,000 ft. the Welder Oil Corp.'s No. 3 Welder ..... T.D. 4,000 ft.; drlg.

WHITE POINT—SAN PATRICIO COUNTY

United Prod. Co.'s No. 3 Cage ..... T.D. 4,125 ft; reinstated to deepen.

LOS OLMOS POOL—STARR COUNTY

Bennett O. & G. Co.'s No. 1 Seabury et al, Porcion 75.... Moving in.

Coastal O. & G. Co.'s No. 1 Kelsey-Bass, 448 ft. to N line, 150 ft. to W line of Tract 52, Sur. 2, Porcion 86.. Location.

Davis et al's No. 3 Kelsey-Bass, 150 ft. from N and W lines of W 10-ac. of SE NW of Sur. 6, Subd. of Porcions 75, 76 and 77 ..... T.D. 493 ft.; comp. 20 bbls.

H. H. Davis' No. 4 Kelsey-Bass, 20 ft. to E line, 150 ft. to N line of SW NW Sec. 6, Subd. of Porcions 75, 76 and 77 ..... T.D. 320 ft.; drlg.

Felder, Mitchell & Barnsley's No. 1 Kelsey-Bass, in Sur. 8, Subd. of Porcions 75, 76 and 77 ..... T.D. 320 ft.; drlg.

Griffin et al's No. 1 Bass, 150 ft. from N and W lines of NW NW Sur. 11, Subd. Porcions 75, 76, 77 ..... Location.

Hooks and Weaver's No. 5 Kelsey-Bass, 525 ft. to S line, 150 ft. to W line of lease ..... T.D. 480 ft.; comp. 20 bbls.

M. A. Landrum's No. 2 Kelsey-Bass, 519 ft. from S line, 150 ft. from E line of Sur. 6, Porcions 75, 76 and 77 ..... Location.

Los Olmos O. & G. Co.'s No. 11 Kelsey-Bass..... T.D. 452 ft.; comp. 40 bbls.

M. A. Landrum's No. 1 A. K. Bass, Sec. 6, 150 ft. to S and E lines of lease ..... Location.

Tom C. Patton's No. 1 Kelsey-Bass, 150 ft. to W line, 150 ft. to S line of 20-ac. tract in NW NE of Subd. 8 of Porcions 75, 76 and 77 ..... Spudded in.

R. H. Pursley's No. 1 Seabury, 150 ft. from E line, 4,125 ft. from S line of Share 5, of W two-thirds of Porcion 75 ..... T.D. 439 ft.; abd. dry.

Quien Sabe O. & G. Co.'s No. 3 Kusch, Share 11, W two-thirds of Porcion 75 ..... T.D. 488 ft.; abnd.

Rio O. & G. Co.'s No. 1 Kelsey-Bass (formerly carried as Los Olmos O. & R. Co.'s No. 1 Kelsey-Bass) T.D. 910 ft.; abnd., lease went back to Los Olmos O. & G. Co.

Rio O. & G. Co.'s No. 3 Kelsey-Bass, No. 6 Subd., Porcions 75, 76 and 77 ..... T.D. 486 ft.; drlg.

San Marcos Oil & Gas Co.'s No. 9 Ivey, Share 8, W two-thirds of Porcion 75 ..... T.D. 206 ft.; set csg.

Tarver and Nance's No. 3 Kelsey-Bass, 150 ft. from N and W lines of SW SE Sec. 7, Subd. of Porcions 75 76 and 77 ..... T.D. 460 ft.; comp. small gas well.

WEST COLE POOL—WEBB COUNTY

French Oil Corp.'s No. 7 Benavides, 2,310 ft. from N line, 150 ft. from W line of Sur. 659 ..... Spudded in.

ANDREWS POOL—ZAPATA COUNTY

The Major Co.'s No. 1 Benavides, 150 ft. from NW and SW lines of Sur. 12 ..... T.D. 1,504 ft.; tested oil and salt water.

ESCOBAS POOL—ZAPATA COUNTY

E. K. Bateman's No. 1 M. Garza Estate, 150 ft. to NE and SE lines of Douglas Subd. of Comitas grant ..... Location.

E. R. Black & Paul S. Williams' No. 1 Comitas grant, 150 ft. from NW and NE lines of Blk. 100 ..... Derrick.

F. M. Blair & Son's No. 1 Montemayor, 450 ft. to N, 150 ft. to E line of Blk. No. 1, Sur. 63 ..... T.D. 1,390 ft.; drlg.

Daniels & Hill's No. 2 Montemayor, 112 ft. from N line, 774 ft. from E line of Blk. 7, Sur. 64 ..... T.D. 1,484 ft.; abnd.

O. W. Killam's No. 5 Medina, 325 ft. from SE line, 480 ft. from NE line of Share 34 of Comitas grant .... T.D. 1,466 ft.; comp. 75 bbls.

W. M. Lee's No. 1 I. G. Trevino, 150 ft. from S and W lines of Blk. 7, Sur. No. 66 ..... T.D. 1,450 ft.; set csg. W.O.C.

Lobo Oil Co.'s No. 3 Montmayor, 491 ft. from N line, 510 ft. from W line of Blk. 7, Sur. No. 64 ..... T.D. 980 ft.; drlg.

McGinley Oil Corp.'s No. 1 G. T. Montemayor, 450 ft. to W line, 150 ft. to S line of Blk. 2, Sur. 64 ..... 1,400 ft., coring.

D. M. Shaffer's No. 1 M. Garza, 150 ft. from NE and NW lines of Blk. 56, C. A. Douglas Subd. of Zerro ranch ..... T.D. 1,475 ft.; abnd.

Trevino Oil Corp.'s No. 16-A Trevino, 150 ft. from S and E lines of Blk. 14, Sur. 412 ..... T.D. 1,251 ft.; comp. 20 bbls.

Trevino Oil Corp.'s No. 1-C Trevino, 364 ft. from N line, 665 ft. from W line of Blk. 15, Sur. 412 ..... T.D. 1,310 ft.; set csg.

CHARCO-REDONDO POOL—ZAPATA COUNTY

Bob & Richey's No. 29 Martinez, 810 ft. from SW line, 360 ft. from SE line of Blk. 24, W. R. Duke Subd., Charco Redondo grant ..... Location.

Injunction Proceedings to Save Gas

California Department of Natural Resources Begins Suit Against Operators in Dominguez Field. Umpire Anderson Issues Sharp Warning

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Apr. 16.—The substantial increase in crude oil production since the first of the current month and the revision in gasoline prices has precipitated another crisis in the California oil industry. This has resulted in the institution of injunction proceedings to prohibit the waste of natural gas in the Dominguez Field of Los Angeles Basin and a definite warning from Umpire Neal Anderson that the State's curtailment program was facing a complete collapse until immediate drastic steps were undertaken to alleviate the situation. The advance of 2 cents per gallon in the retail price of the third grade gasoline at the opening of business April 9, has thrown the field wide open again to bootleggers and tea kettle refiners who have been shut down for the past two months because of the inability to meet competitive prices. Preparations have been under way for the past several days to reopen the refineries shut down during this period and it appears quite probable that gasoline from these plants will begin making its appearance in southern California territory within the next week or 10 days. Practically all of the larger independent refiners stepped up the retail price of gasoline 2 cents per gallon shortly after the announcement. The price to be posted by the tea kettle operators which are again resuming operations will either make or break the existing price structor refined oil. If they begin chiseling again retail prices must of necessity be generally reduced. Spot oil is not as plentiful as it was several months ago but there is, nevertheless, a sufficient amount of crude oil available for spot sales. Past experience has proven that the crude oil situation cannot be dried up by the purchase of spot oil. Several attempts to accomplish this purpose have failed and refiners interested in effecting stabilization of refined oil prices obviously recognize the necessity of state regulation either through the Sharkey oil conservation bill or some other effective measure.

State Enters Suit

The State Department of Natural Resources has intervened under the California gas conservation law to prohibit further waste of natural gas in the Dominguez Field. This action, instituted early this week, will get under way at an early date unless the Sharkey oil conservation measure is ratified at the special election May 3. The case came up in the Superior Court April 15, at which time the court set a date for the hearing on the preliminary injunction asked by the State. The petition of the State, while directed at the Burnham Exploration Co., Union Oil Co., Shell Oil Co., Associated Oil Co., R. M. Harris, Gardena Syndicate, Dominguez Estate Co., Wells-Fargo, Bank & Union Trust Co., I. W. Hellman, F. J. Hellman, Frederick J. Hellman, Carson Estate Co., Childs Estate Co. and the Holly Development Co., is not expected to be contested by either the Union or Shell companies. These companies are desirous of curtailing production in conformity with the statewide curtailment program but are unable to do so because of the insistence of lessors. In addition to being obliged to resume unrestricted production because of the demand of lessors, operators have found it necessary to resume drilling and production activities because of a joker in the leases which provides that properties involved must be quitclaimed at the end of 20 years irrespective of how much oil still remains unrecovered. Unlike the ordinary lease which requires completion of all drilling within the 20-year period and perpetual pumping rights thereafter, several leases in the Dominguez Field require an out-and-out quitclaim, which includes abandonment of wells and restoration of the properties to their original surface condition. Upon the resumption of production, the Dominguez Field jumped from an output of 17,000 bbls. per day to its present figure, which is a little in excess of 34,000 bbls. daily.

Complaint Filed

Under the complaint filed last Monday by James Bennett, representing the California Department of Natural Resources, the Superior Court is asked to prohibit the blowing of dry gas to the air in excess of 1,000 feet per barrel of oil or more than 1,500,000 feet per day in the entire field.

One of the most important features in the State's action to prohibit the waste of natural gas at Dominguez is that portion wherein the court is asked to restrain the landowners from requiring operators to produce in excess of the amounts to be established by the court. The complaint declares that the existing contracts between operators and landowners are illegal and void as to any provisions which require operations and production not in conformity with the gas conservation law and it is asked that the court so declare them illegal. Based on a maximum gas-oil ratio of 1,000 feet of gas to each barrel of crude, the DeFrancis lease will be allowed to produce 1,333 bbls. per day, the Manuel lease 210 bbls., Reyes lease 4,200 bbls., Callender lease 3,600 bbls., Carson lease 950 bbls., Hellman lease 4,400 bbls. and the Harris lease 17 bbls. per day. Just previous to the filing of this complaint the State's representative charges that the Union Oil Co., Burnham Exploration Co. and Gardena Syndicate were blowing 5,000,000 feet of natural gas to the air from the Callender lease, 6,000,000 feet from the Hellman lease and 1,000,000 feet per day from the Carson lease. The Shell Oil Co. and Dominguez Estate were charged with a daily dissipation of 10,000,000 feet of natural gas from the Reyes lease and 500,000 feet from the Manuel lease. The Associated Oil Co. and Dominguez Estate are charged with blowing 3,000,000 feet of natural gas per day to the air from the DeFrancis lease. In the State's complaint it is alleged that "the production of natural gas in such quantities that the same is unreasonably wasted likewise causes an unreasonable waste of the petroleum oil produced with the said natural gas by increasing the quantity of oil which must be stored aboveground in excess of demands for use, occasioning excessive unreasonable losses by evaporation or leakage from storage and increasing the hazards of loss from fire."

Umpire Anderson's Warning

The general breakdown in curtailment throughout the State since April 1 has intensified the local situation and, while most of the major companies are still adhering strictly to curtailment obligations, there has been nevertheless a partial resumption in several fields due either to lease requirements or because of the insistence of lessors. The substantial increase in production has become such a threat to the statewide curtailment program that Umpire Neal Anderson has found it necessary to warn producers of the seriousness of the situation. In this communication sent to each and every operator in the State, Umpire Anderson informs them that, "I have been trying to help California operators through the past periods of depression, unstabilized markets, the breaking down of moral and the financial breakdowns of many of the companies that have depleted and exhausted their resources. These things come through this office daily and during the last few months instead of improving the conditions are getting worse, due possibly to the confused state of each operator who is hearing all sorts of tales and propaganda and has finally lost track of the big thing that we have been trying to do for the last 2½ years and that is to stabilize our market so that we might get a fair living price for our crude oil production.

"In a way we have gone through our big test, that is, we have passed through the high potential production of Santa Fe Springs, Long Beach and Playa Del Rey. These fields have been rapidly declining for the past six months and in this decline of production we find operators who have been forcing wells to capacity, selling here and there, paying no attention to the curtailment program, disregarding the offset conditions, drainage, and competitive production in town lot sections, disregarding any agreement that they might have had with their fellow-operators and, in fact, inviting disaster to themselves and to all their friends and employes. These men today have exhausted their resources, exhausted their properties, exhausted themselves as well as the industry and have accomplished nothing.

"Each and everyone has a different idea as to what should be done but there is no one yet who has advanced any constructive idea or thought or proposed a plan that is at the present time any better than the one we are now working under. I personally believe the industry as well as the umpire and companies as a whole will attempt any plan if they think it is a better plan than the present curtailment method that they are now using. There has been none suggested and the present plan seems to be the only means of stabilizing our production and thus preventing a complete collapse of our markets. Why not get behind the present plan that we are now working under, not in a halfhearted way but put your shoulders to the wheel and see if we cannot accomplish for once the things that we have started out to accomplish? I have to admit, as umpire, that in the last two or three months some of the fields have been failing miserably in their performances and I have not the power to go into these fields and adjust the production properly among the operators under the voluntary plan if I do not have the entire co-operation of the producers themselves.

Facing Drastic Regulation

"We are walking as straight as we can walk towards a very drastic state enforcement if we break down the entire structure which would not only break down the oil industry but every other business with it and would wreck the financial structure of the State if the governor did not immediately take action to stop it because California cannot permit throwing away its resources any more than Oklahoma or Texas or any other state that is now working under state regulation. I am not saying that we need state regulation or any laws if it were possible for the operators as a whole to get together and honestly work out their problems among themselves and with the umpire. It seems, however, that this cannot be done and instead of the position being stronger and the desire of the operators being to uphold their industry and create a healthy condition, the industry is becoming more weakened and diseased each month. Your problems have been given careful consideration and field allotments have been carefully worked out more liberally and more thoroughly than if you had some kind of a set law or regulation. At all times we have tried to adjust the production of a field with the operators to meet their operating conditions and have always worked towards the purpose of being a helping rather than a hindering agent.

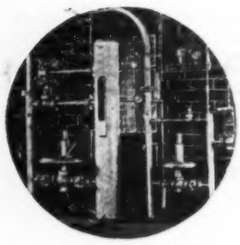
"My entire thought in this matter is that the industry is entirely in the hands of the operators and if they wish to wreck it, it is certainly their privilege. I have done all that I can to prevent it and I am tired and disgusted with the actions and the pitiful attempts and gestures that have been made by many of the companies that are pretending to curtail their production and play the game as men would play it. I am won-

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	April 2, 1932		March 26,1932			
Intercoastal-	Total	Daily	Total	Daily	This year	Same time
domestic—	this week	average	last week	average	to date	last year
Diesel and gas oil	70,665	10,095	.....	.....	116,890	679,024
Gasoline	117,320	16,760	214,399	30,628	1,688,623	4,047,897
Kerosene	.....	.....	.....	.....	.....	41,512
Foreign exports—						
Crude oil	139,853	19,550	120,626	17,232	2,314,132	1,851,153
Fuel oil	266,237	38,034	211,489	30,213	2,648,835	4,140,064
Diesel and gas oil	10,432	1,490	109,712	15,673	577,384	970,362
Gasoline	263,606	37,658	218,131	31,162	2,551,377	2,506,430
Kerosene	2,999	428	145,935	20,848	718,838	429,118
Lubricants	.....	.....	.....	.....	.....	6,928
Naphtha distillates	.....	.....	.....	.....	41,175	.....
Coastwise-domestic—						
Crude oil	293,249	41,893	527,677	75,382	4,099,213	5,236,614
Fuel oil	119,638	17,091	439,371	62,767	3,911,846	4,019,190
Diesel and gas oil	29,792	4,256	34,203	4,886	467,201	438,647
Gasoline	505,448	72,207	169,463	24,209	3,688,407	2,916,359
Kerosene	8,054	1,151	.....	.....	46,358	106,471
Naphtha distillates	.....	.....	.....	.....	.....	4,952

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Diesel and gas oil	.....	.....	70,995	10,142	70,995	.....
Gasoline	.....	.....	78,340	11,191	146,441	115,089
Lubricants	.....	.....	.....	.....	7,849	11,000
Foreign exports—						
Crude oil	.....	.....	.....	.....	418,965	6,010
Fuel oil	.....	.....	.....	.....	442,083	198,876
Diesel and gas oil	.....	.....	2,940	420	253,931	193,548
Gasoline	190,199	27,171	98,049	14,007	896,063	886,047
Kerosene	16,667	2,381	72,934	10,419	274,951	190,412
Lubricants	.....	.....	12,659	1,808	20,884	.....
Coastwise-domestic—						
Fuel oil	103,259	14,751	126,900	18,129	694,659	1,098,770
Diesel and gas oil	.....	.....	13,131	1,876	176,747	88,756
Gasoline	93,294	13,328	.....	.....	811,802	740,722
Kerosene	8,253	1,179	.....	.....	19,110	50,120



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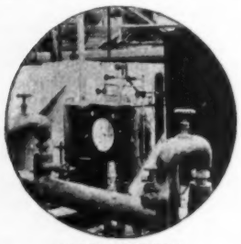

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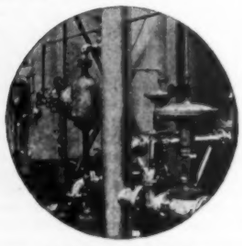

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dering if you realize what a position most of you would be placed in if each marketing company would produce all of the oil it could produce and quit buying from nonrefining companies. All of the fields would open up as well as the big potential deep sand fields that are now being held back by a moratorium on drilling.

"Stop and give these things a thought. The first thing that will enter your mind will be to the effect that we have been promised this and we have been promised that. Not all of these promises have been fulfilled. Stop also, however, and think about your own position and condition. Review in your own mind the operators around you and yourselves and see how well you have been keeping your own promises. I wonder sometimes how the patience of the marketing companies has been able to stand by and see this horseplay put on by the operators who are supposed to curtail and never have and possibly never will voluntarily curtail, depleting structures that they are in, taking oil from their neighbors, and ruining their own properties. The other producing states in the nation at this time are under full curtailment and are beginning to feel a beneficial effect in the rehabilitation of their industry. In our own State of California why should we stand by and see our industry wrecked for lack of co-operation? I again appeal to you as I have many times in the past to put your shoulder to the wheel and do your part if you want to save the oil industry in California."

Dominguez

The Union Oil Co., which has been obliged to resume drilling and production activities in the Dominguez Field because of the insistence of lessors and a quitclaim clause in the original lease, finished an excellent producer during the past week when No. 28 Callender, a new well, was brought in flowing 2,390 bbls. of exceptionally clean 32.2 gravity oil per day. This new well, bottomed in the third Callender zone at 5,092 feet and finished with a 6⅝-inch liner carrying 618 feet of perforated, is flowing through a 1-inch bean under a pressure of 720 pounds and is producing 2,280,000 feet of natural gas per day in addition to the crude oil. The Union is running three other strings of tools in the Dominguez Field and will probably have these projects on production within a few weeks unless their completion is held up by the injunction proceedings instituted by the State Department of Natural Resources. It is significant to note that the Union has not made any additional locations since the injunction proceedings were started early in the past week. The Associated put No. 5 DeFrancis on a production test after deepening this well to the 4,500-foot level, but this project, making 430 bbls. of fluid on a compressor, may require further work as the production was still cutting 75 per cent at last reports. The company has also started work on No. 6 DeFrancis and will attempt to redrill and deepen this well in the hope of developing commercial production in the lower zone. J. E. O'Donnell has resumed work on No. 2 Dominguez, bottomed at 4,447 feet, following completion of some corrective work resulting from mechanical trouble. The Republic Petroleum is rotating in No. 1 Childs, a new well on the Childs property quitclaimed a short time ago by the Shell Oil Co. The Shell is running two strings of tools at Dominguez, one of which, No. 12 Reyes, should be finished within a few weeks. The Shell Oil Co. has the two largest producing wells in the Dominguez Field, No. 101 Reyes, and No. 39 Reyes, flowing 3,905 bbls. and 3,420 bbls. per day respectively. Following these come the Union's No. 17 Hellman, flowing 3,010 bbls. per day, No. 14 Hellman flowing 2,724 bbls. per day, No. 20 Callender flowing 2,318 bbls. per day and No. 4 Carson flowing 1,778 bbls. daily.

Long Beach

Although drilling operations have become a negligible factor, the Long Beach Field continues to yield new wells and recompletions from time to time. The center of interest is west of American Avenue near Wardlow Road and Pacific Avenue. The Hancock Oil Co.'s No. 21 Daly, located in this area, blew in last week when the casing was perforated in the 5,100-foot zone but subsequently died due to gas depletion. This well was put on the beam a few days ago and is pumping 334 bbls. of relatively clean 27.7 gravity oil. No. 6 Signal of the A. T. Jergins Syndicate, another well in this section, was recompleted a few days ago pumping 404 bbls. of exceptionally clean 26.4 gravity oil per day after being deepened to 5,103 feet. The Chiksan Oil Co.'s No. 1 Riedman, finished about a month ago, has shown a consistent decline in production but is still making 386 bbls. of 27.1 gravity oil from the 5,102-foot level. The Dabney-Johnston Oil Corp. has just concluded drilling operations on No. 75 Signal at 5,100 feet and should be tanking oil within a few days. In the older section, Tom Cannon has recompleted No. 2 Harriman Jones, pumping 230 bbls. of 26.5 gravity oil per day after plugging back from 6,032 feet to 5,037 feet. Production of the Long Beach Field, reflecting the general breakdown in curtailment, has been averaging approximately 80,000 bbls. per day for several weeks. This substantial increase would be further augmented if the Shell, Union and other major operators opened their producing wells, shut in for more than a year.

Ventura Avenue

The Shell Oil Co. increased its producers in the Ventura Avenue Field by completing No. 72 Taylor, flowing 1,598 bbls. of exceptionally clean 30.8 gravity oil and 3,100,000 feet of gas per day. This project, bottomed at 5,700 feet and finished with an 8⅝-inch combination string cemented through perforations at 5,552 feet, is flowing through a 1-inch bean under a pressure of 1,200 pounds. The Shell, which has restricted its drill-

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status:
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	9- 2-15	7,414	suspended
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	6,238	suspended
Co-operative Dev. Co., No. 1 Del Rey	26- 2-15	rig	rigging up
Lawndale Pioneers, Inc., No. 1 Peck, Los Angeles Co.	20- 3-14	6,378	swabbing
Barcus, W. I., No. 1 Watson, Los Angeles Co.	28- 4-13	rig	rigging up
Baldwin Oil Co., No. 9 Inglewood, Los Angeles Co.	7- 2-14	1,647	sd. sh. drilling
Baldwin Hills Synd., No. 1 Inglewood, Los Angeles Co.	17- 2-14	4,090	cemented
Brubaker, W. C., No. 1 Van Nuys, Los Angeles Co.	11- 2-15	2,700	suspended
Rucker & Croul, No. 2 Puente, Los Angeles Co.	27- 2-10	2,200	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2- 9	2,481	sd. sh. drilling
Jones, W. I., No. 1 Bell, Los Angeles Co.	31- 2-12	1,593	reaming
Weist Oil Co., No. 1 Montebello, Los Angeles Co.	34- 1-11	4,902	suspended
Blinn & Gray, No. 1 Montebello, Los Angeles Co.	6- 2-11	5,060	recemented
Wardell & Menichini, No. 1 Montebello, Los Angeles Co.	7- 2-11	rig	rigged up
Yellowstone Oil Co., No. 1 Alhambra, Los Angeles Co.	24- 1-13	3,919	suspended
Yellowstone Oil Co., No. 2 Alhambra, Los Angeles Co.	19- 1-12	2,015	suspended
Davidson Oil Co., No. 1 Monterey Park, Los Angeles Co.	32- 1-12	....	location
Rucker, L. W., No. 1 Calabasas, Los Angeles Co.	26- 1-17	1,004	cleaning out
Caballero estates, No. 1 Calabasas, Los Angeles Co.	23- 1-16	1,515	gr. sd. drilling
Marble, Willard, No. 1 Chatsworth, Los Angeles Co.	6- 2-16	1,395	suspended
Ajax Pet., No. 1 Newport, Orange Co.	21- 6-10	7,259	suspended
Nuoil Co., No. 1 Newport, Orange Co.	29- 6-10	1,970	resume work
Orangethorpe Pet., No. 1 Brea, Orange Co.	32- 3-10	mtl.	bldg. rig
Beck, Alfred, No. 1 Corona, Riverside Co.	8- 4- 6	1,110	suspended
Spindletop Oil Co., No. 1 Salton Sea, Riverside Co.	25- 7-10	3,590	suspended
Duncan, N. I., No. 1 Sagebrush, Riverside Co.	8- 4- 6	1,157	suspended
Colan Dev. Co., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,392	sidetracking
Mason Oil Co., No. 1 Salton Sea, Imperial Co.	1-17-15	660	sd. sh. drilling
Woods, D. H., No. 1 Salton Sea, Imperial Co.	7-11-16	755	sd. sh. drilling
Borderland Oil Co., No. 2 Encinitas, San Diego Co.	12-13- 4	2,677	redrilling
South Bay Oil Co., No. 1 Border, San Diego Co.	31-18- 2	1,243	suspended
Itasca Pet. Co., No. 1 Mesa, San Diego Co.	33-18- 1	1,700	cemented
Oklahoma Oil Corp., No. 1 Palms, San Diego Co.	25-11- 8	1,888	sd. sh. drilling
Shannon, C. H., No. 1 Kearney, San Diego Co.	14-15- 3	1,046	suspended

ing operations in the Ventura Avenue Field to one well at a time, is rigging up rotary equipment on No. 73 Taylor preparatory to spud in during the next 10 days. The Associated is the only company running more than one string of tools in this field as it is drilling four wells on the Lloyd lease and one on the Ventura Avenue Land & Water Co. property. The General Petroleum is sidetracking 5¾-inch casing in No. 4 Tomson in the Rincon Field of Ventura County at 3,400 feet.

Although the drilling moratorium covering the Elwood Field of Santa Barbara County expired April 1, and has not yet been renewed, operators in this field have not shown any disposition to engage in deep zone exploitation. The production of this field, due to a special dispensation granted by the Operators General Committee on Statewide Cutailment, has been averaging 15,000 bbls. per day, or approximately 5,000 bbls. in excess of its daily allotment. This excess production was allowed operators in consideration of the moratorium or agreement to refrain from deep zone exploitation. Although the attempt to unify drilling and production activities in productive horizons below the Vaqueros has not met with success, the Signal Oil & Gas Co. and the Seaward Oil Co. have recently effected a joint management of their respective properties in the Elwood Field. This consolidation covers only the production activities of the two companies as far as the Vaqueros zone is concerned.

Goleta

The General Petroleum, in addition to abandoning the James and Sands tideland drilling permits, has completed preparations to recondition No. 1 More in the Goleta gas field of Santa Barbara County. During the winter months, Nos. 1 and 2 on the More property have been delivering natural gas for consumption in southern California territory. Construction work is going forward rapidly on the Irvine pipe line which is being laid from the Santa Barbara Mesa to the Bankline pier at Elwood. Upon the completion of this 13-mile 6-inch line, operators in the Santa Barbara Mesa Field will be able to load tankers for either export or coastwise shipments. This line is being installed by James Irvine and will give producers in the Santa Barbara Mesa Field an outlet for current production. This oil has been selling all the way from 30 to 50 cents per barrel but will probably command a little higher price when a normal outlet is available as previous prices represent distress sales. The Barnsdall is rotating at 3,575 feet in No. 1 Careaga in the Los Alamos section of Santa Barbara County with a good gas showing on the ditch. No. 1 Tognazzini, discovery well of the Barnsdall and Rio Grande of the Gato Ridge Field of Santa Barbara County, was put on a pumping test early in the week but mechanical difficulty was experienced in lifting this heavy oil which can be corrected at a minimum of expense.

Kettleman Hills

There were no wells completed in the Kettleman Hills district but it is probable the Kettleman North Dome Association will finish No. 81-2 P in the very near future and complete three or four additional wells between now and the close of May. Completion of these wells will substantially increase the potential daily production of the Kettleman Hills Field, which now has a rated potential of 285,000 bbls. per day. Based on the amount of work under way and discounting any mechanical trouble, Kettleman Hills should have a potential daily rating of approximately 350,000 bbls. with-

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status:
Standard, No. 1 Santa Rosa Island, Santa Barbara Co.	.....	....	bldg. roads
Barnsdall, No. 1 Los Alamos, Santa Barbara Co.	31- 8-33	3,593	sd. sh. drilling
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-33	8,770	br. sh. drilling
Wilson, N. S., No. 1 Los Alamos, Santa Barbara Co.	2- 7-35	3,660	br. sh. drilling
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	2,047	abandoning
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	2,050	abandoning
Johnson, G. W., No. 1-A Goleta, Santa Barbara Co.	19- 4-27	5,554	suspended
Sovereign Oil Co., No. 1 Guadalupe, Santa Barbara Co.	20-10-35	5,500	suspended
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
The Texas Co., No. 1 Carpinteria, Santa Barbara Co.	33- 4-25	mtl.	bldg. rig
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
Woodrow Pet., No. 1 Miguelito, Ventura Co.	4- 3-24	rig	rigging up
Bell, H. H., No. 1 South Mountain, Ventura Co.	22- 3-21	2,484	suspended
Pure Oil Co., No. 1 S. F. Canyon, Ventura Co.	15- 4-21	2,591	suspended
Magu Synd., No. 1 Oxnard, Ventura Co.	17- 1-25	5,812	hd. sd. drilling
American Oil Co., No. 1 Conejo, Ventura Co.	33- 2-20	1,590	cleaning out
Graham & Loftus, No. 1 Goose Lake, Kern Co.	20-27-22	6,619	cleaning out
General Pet., No. 1 Buttonwillow, Kern Co.	6-28-23	3,094	testing
Wilshire Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	7,000	cleaning out
Milham Expl. Co., No. 12 Buttonwillow, Kern Co.	7-28-23	2,520	cleaning out
Milham Expl. Co., No. 13 Buttonwillow, Kern Co.	9-28-23	rig	rigging up
Purman, T. H., No. 1 McKittrick, Kern Co.	22-29-21	3,963	sd. sh. drilling
Welport Oil Co., No. 8 McKittrick, Kern Co.	26-29-21	1,298	recemented
Federal Drlg. Co., No. 1 Buena Vista, Kern Co.	20-31-24	5,380	suspended
General Pet., No. 1 Belridge, Kern Co.	30-28-21	5,260	suspended
Wallace, K. C., No. 1 Belridge, Kern Co.	32-29-21	4,222	suspended
Rio Cal Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	suspended
Fullerton Oil Co., No. 5 Semitropic, Kern Co.	9-28-24	510	sd. sh. drilling
Cumberland Oil Co., No. 2 Devils Den, Kern Co.	17-26-18	3,225	suspended
Taylor, R. W., No. 1 Devils Den, Kern Co.	29-25-19	rig	suspended
Totem Oil Co., No. 1 Devils Den, Kern Co.	29-25-19	rig	suspended
Pasadena Oil Co., No. 1 Blackwell Corner, Kern Co.	15-26-19	106	rig cable tools
Regina Oil Corp., No. 1 Mojave, Kern Co.	26-10-14	2,784	sd. sh. drilling
Meridian Oil Co., No. 1 Mojave, Kern Co.	11- 9-15	4,000	suspended
Harding, J. B., No. 1 Mojave, Kern Co.	5-10-10	1,030	redrilling
Barnsdall Oil Co., No. 1 Tejon, Kern Co.	15-11-20	5,302	sd. sh. drilling
Ritchie, J. J., No. 1 Tejon, Kern Co.	33-11-19	6,025	suspended
Descanso Oil Co., No. 1 Tejon, Kern Co.	31-11-19	2,749	suspended
Associated, No. 1 Jacalitos, Fresno Co.	22-21-15	6,197	suspended
Kingsburg Expl. Co., No. 1 Kingsburg, Fresno Co.	30-16-23	2,430	suspended
Kent & McDonald, No. 1 Carrizo Plains, San Luis Obispo	3-32-22	2,632	br. sh. drilling
Emerich Oil Co., No. 1 Carrizo Plains, San Luis Obispo Co.	22-32-22	412	sd. drilling
Trav-El Oil Co., No. 1 Carrizo Plains, San Luis Obispo Co.	7-32-22	2,450	cleaning out
Indian Dome Oil Co., No. 1 Edna, San Luis Obispo Co.	26-31-12	3,352	redrilling
Martin, J. D., No. 1 Edna, San Luis Obispo Co.	5-31-13	3,070	cleaning out
Paso Robles Oil Co., No. 1 Edna, San Luis Obispo Co.	27-27-11	4,191	cleaning out
Emerich Oil Co., No. 1 Atascadero, San Luis Obispo Co.	13-28-12	1,980	hd. sd. drilling
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	1-29-12	1,650	suspended
Pacific Inland, well No. 1, Monterey Co.	19-23-15	2,339	redrilling
Brown, W. F., No. 1 Parkfield, Monterey Co.	15-23-14	1,051	suspended
Guess, E. B., No. 1 Corcoran, Kings Co.	7-21-21	6,197	suspended
Owens Bros., No. 1 Dudley Ridge, Kings Co.	32-22-20	rig	suspended
Kettleman Nat. Gas Co., No. 1 Dudley Ridge, Kings Co.	18-22-19	1,100	suspended
Irma Investment Co., No. 2 Dudley Ridge, Kings Co.	7-23-20	1,224	testing
Eagle Oil Co.; No. 1 Dudley Ridge, Kings Co.	15-23-20	1,125	gas—shut in
Eagle Oil Co., No. 2 Dudley Ridge, Kings Co.	15-23-20	rig	rigging up
Valley Expl. Co., No. 1 Dudley Ridge, Kings Co.	12-23-19	1,302	suspended
Knudsen & Schmidt, No. 1 Reef Ridge, Kings Co.	36-23-17	5,894	cleaning out
Seymour, L. W., No. 1 Avenal, Kings Co.	10-23-16	1,148	testing
Magee & Stone, No. 1 Alpaugh, Kings Co.	34-24-22	3,550	gr. sd. drilling
Ducor Pet. Co., No. 1 Ducor, Tulare Co.	14-24-27	2,200	redrilling
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,092	suspended
Gravity Expl. Co., No. 1 Alpaugh, Tulare Co.	11-24-23	1,004	suspended
Ellis & Sanford, No. 1 Tulare Lake, Tulare Co.	20-24-23	1,920	suspended
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	7,694	suspended
Napa Oil Co., No. 1 Griffith, Napa Co.	7- 8- 3	2,848	cleaning out
Orinda Pet., well No. 1, Contra Costa Co.	32- 1- 3	2,120	suspended
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-15- 4	1,040	suspended
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 2-10	4,750	suspended
Hilderbrandt, R., No. 1 Crows Landing, Stanislaus Co.	36- 6- 7	1,130	suspended
Rushing Oil Co., No. 1 Waterford, Stanislaus Co.	20- 3-13	2,391	sd. sh. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23- 3	3,040	suspended
Pacific Northern Oil Co., No. 1 Guinda, Yolo Co.	23-12- 3	2,193	sd. sh. drilling
Easton & Monell, No. 1 Colma, San Mateo Co.	25- 3- 6	3,107	sd. sh. drilling

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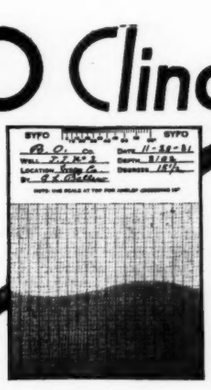

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in the next 60 or 90 days. In addition to seven wells being drilled by the Kettleman North Dome Association, No. 3 Whepley of the Associated, No. 4 Huffman of the Superior and No. 278-33 J of the Standard should be tanking oil within 90 days. The North American is rotating in what appears to be a barren gray sand at 8,995 feet in No. 1 Elsinore, out on the north flank of the North Dome. This well is not showing as good as anticipated but may develop substantial production. No. 1 Elsinore, it will be recalled, came in several weeks ago but was subsequently killed and drilling resumed when the production failed to clean up after a four-day production test. The Petroleum Securities is still held up with mechanical trouble in No. 1 Burbank, a test in the Middle Dome of Kettleman Hills, and the possibility of an ultimate recovery is quite doubtful. This company is reported to have spent $160,000 since this well was taken off production and remedial work started. The Standard's No. 6-29 V, an offset to No. 1 Burbank of the Petroleum Securities in the Middle Dome, is rotating at 7,650 feet, drilling operations having been resumed following a temporary shutdown a few weeks ago. Production of the Kettleman Hills Field, due to the splendid co-operation of producers involved, has been kept down to its allowable daily production of 60,000 bbls. Production has fluctuated from day to day but over a period of several months the average has been very close to the maximum allowable. During January, production of the Kettleman Hills Field averaged 60,265 bbls., while the output during February averaged 59,846 bbls. per day. Production during March and April has been at approximately the same rate.

Lost Hills-Belridge

The Belridge Oil Co. is still held up with mechanical trouble in No. 64-27, a deep test in the North Belridge Field of Kern County at 8,050 feet and consequently the projected production test of the Kreyenhagen in this field will be delayed until a complete recovery has been effected. Drilling operations have been concluded on this project and the hole was being prepared for the final string of casing when this difficulty occurred. The company's No. 49-35, which started to flow of its own accord last week, is producing 250 bbls. of fluid cutting 90 per cent and 5,000,000 feet of natural gas per day from 5,595 feet. This well has encountered bottom water and will consequently either be plugged back or carried down as a deep test. Plugging operations have not been especially satisfactory in this particular section due to the inability to get commercial production after the bottom water has been plugged off. The cement and rotary drilling fluid seem to have a tendency to mud off the small amount of productive formation existing at this particular point.

Two new locations were staked in the Fruitvale Field of Kern County and, while drilling operations seem to be tapering off somewhat, it appears to be probable operators will keep a minimum of five strings of tools in operation during the next 60 days. The Western Gulf has plugged back No. 1 Carpenter to 4,025 feet and is running tubing preparatory to an early production test. The Mohawk and Sea Hawk are testing for a water shut off on two wells and if successful should finish new wells within 10 days. The Milham Exploration Co.'s No. 21 S. P. failed to result in commercial gas production at 2,520 feet and preparations are being made to pull the 6⅝-inch liner and drill ahead. No. 14 S. P. in Section 9-28-23 is being rigged up preparatory to an early spud. Additional development is getting under way in the Tulare Lake-Dudley Ridge district, where a determined effort is being made to develop commercial gas production.

D. C. WAINWRIGHT DIES

PHILADELPHIA, Pa., Apr. 18.—David C. Wainwright, 50, a director of the Union Petroleum Co. and also connected with the Sinclair Refining Co., died at Jefferson Hospital here.

Small Producers in Eastern Fields

Southeast Ohio Had One 25-Bbl. Well and Southwest Pennsylvania One 10-Bbl. Well. West Virginia Has One Gas Well

By Staff Correspondent

PITTSBURGH, Pa., Apr. 18.—The test of Joseph Swingle and his associates on the Edwards farm at the mouth of Dana's Run, below Newport, in the new pool in southeast Washington County, Ohio, is shut down after being drilled to a depth of 2,804 feet. The owners are rigging up with a new cable. No rig was erected, and progress is slow in sending this well to the third Warren sand, which formation is expected to be reached at 2,950 feet.

In Grandview Township, Washington County, William Harris and others' test on the Joseph Crago farm on the headwaters of Cady Run, is now making close to 100 bbls. every 24 hours. This interesting test had been maintaining an average daily production of about 60 bbls. through intermittent flows. About 2,997 feet of 2-inch tubing has been placed in the hole, and reports are that the operators are having trouble with gas.

Benedum and Trees are spudding in to drill on the McKnight tract in this new pool.

The Southeast Ohio division of the eastern fields reported one producer, with an initial production of 25 bbls., one gas well and two dry holes as the total of last week's work. West Virginia had one gasser, and the Southwest Pennsylvania division reported one 10-bbl. producer. This makes a total of two producers, two gassers and two dry holes. The total new production was 35 bbls.

SOUTHEAST OHIO

E. R. Edson & Son Co. increased its string of fine shallow sand producers on the George W. Packard No. 1 lease on Lot No. 4, Section 13, Chatham Township, Medina County, with the completion of No. 35. It was drilled to 400 feet, and came in as a 25-bbl. producer after shot.

In Coshocton County the Ohio Gas Light & Coke Co. has a small gasser in its test on the Nicholas Lower farm in Section 10, Mill Creek Township. This well was drilled to the Berea formation, and had no showing of oil.

In Medina County, E. R. Edson & Son Co. found the sands dry under the W. A. Shaw farm in Section 10, Chatham Township, in No. 19. It was drilled down 393 feet. The Shaw farm is on Lot No. 5. McClay Brothers and others plugged their test on the Henry M. Rine farm in the NE Section 6, Pike Township, Coshocton County, after finding the Clinton sand dry at 2,983 feet.

WEST VIRGINIA

West Virginia's lone completion was a gasser, good for a little better than 500,000 feet of gas. It was the second test of Wilson and Nowery on the Hans-Watts Realty Co. property in Guyandotte district, Cabell County. This well was completed after drilling to a depth of 1,366 feet.

In Wood County there are two wells awaiting tests. They are the test of W. H. Bickle on his own property in Lubeck district, standing at 4,390 feet, and the test of Alleman and Horner on the E. P. Linger farm, which well stands at 595 feet. The Linger farm is in Walker district.

Drilling in West Virginia

The Pittsburgh & West Virginia Gas Co. is shut down in its No. 5,403 on the J. P. Ashcraft farm in Grant district, Wetzel County, at a depth of 3,634 feet. A stray sand was encountered at 3,244 feet, and there was a showing of gas in this well at 3,248 feet. In the same district, the Shimwell Oil & Gas Co. is likewise shut down, with the tools in the hole, in its test on the W. J. Price farm at a depth of 3,053 feet.

In Wirt County, Heck Oil Co. is shut down at 400 feet in its No. 3 on the J. E. and J. G. Watkins farm in Reedy district. A. C. Wagner and others have a rig up for a second test on the Luther Kemp farm in Burning Springs district, as has the Owens-Illinois Glass Co. for a test on the Joseph Orth farm in Grant district, Marion County.

Wayne United Gas Co. is shut down at 1,720 feet in its No. 40 on the A. W. Wilson heirs tract in Lincoln district, Wayne County. The same operator has made locations for Nos. 52 and 53 on the Hoard Baldwin property in Stonewall district, as has the Owens-Illinois Glass Co. for a test on the T. A. Copley farm in Lincoln district. In Union district, the Penn Natural Gas Co. has made a location for a second test on the Guyan Valley Bank tract, and the Southern West Virginia Gas Co. is shut down in its test on the A. W. Preston farm after drilling to a depth of 618 feet.

Madison Gas Co. is drilling at 1,500 feet in its test on the Era Taylor farm in Guyandotte district, Cabell County. The United Fuel Gas Co. is moving in material to drill on the J. Frank Grass farm in Grant district, and in Barboursville district, Marritts Creek Gas Co. has made a location on the Mountain Terrace Land Co. tract.

In Fayette County, Grosscup and Schultz are rigged up for No. 5 on the Black Betsy Coal Co. tract in Kanawha district, and have made locations for Nos. 6 and 7 on the same tract.

Putnam County

In Putnam County H. C. Zogg and Celia Oil & Gas Co. have made locations for a well each. The Zogg location is for No. 3 on the Maddox heirs property in Scott district, and the Celia Oil & Gas Co. location is in the same district on the John Tormey farm. It is for No. 5.

West Virginia Gas Co. is drilling at 850 feet in its No. 36 on the Dingess Run Coal Co. tract in Logan district, Logan County. The same operator has made a location for No. 27 on the same tract.

In Gilmer County, Mollohan and others are drilling at 1,775 feet in their test on the M. Hinkle farm in DeKalb district. This well was No. 849 of Hope Natural Gas Co. and is being drilled deeper. A. E. Ellis and others are rigged up to drill on the Alice M. Ayers farm in the same district. Frank Golden has constructed a rig on the H. E. Engle heirs farm in DeKalb district.

Fry and McCracken are shut down at 2,000 feet in their test on the Clinton E. Fry farm in Cameron district, Marshall County, and in Sandhill district, the Myers Oil Co. has a rig standing on the C. M. Strickland farm.

Godfrey L. Cabot is constructing a road in to the location for No. 9 on the Hill-Long tract in Pleasant district, Clay County. R. C. Jackson is shut down after drilling to 1,440 feet on the Rutherford heirs farm in Grant district, Ritchie County. In Murphy district, W. R. Hayes and others are fishing in their second test on the Wilson Brothers tract and at 1,000 feet, and C. B. Lewis and others are shut down in their second test on the Delia Lyons farm.

United Fuel Gas Co. is cleaning out its No. 4,329 on the Central Trust Co. tract in Warfield district, Mingo County, preparatory to testing. This well is down 3,856 feet. No. 4,331, of the same operator on the Cotiga Development Co. tract is shut down at 4,657 feet for a cable. This well is in Hardee district.

In Lincoln County, the Cambridge Gas Co. has spudded in its second test on the A. M. Mullens farm in Jefferson district, and has reached 40 feet. Grosscup and others are fishing for the tools in their test on the Samuel M. Burdette farm in Elk district, Kanawha County, at 4,758 feet.

SOUTHWEST PENNSYLVANIA

Southwest Pennsylvania reported one well completed, No. 3 of Bromley, Bungard and others on the No. 3 lease of R. J. Clark in South Franklin Township, Washington County. It is a Dunkard sand well doing 10 bbls. a day.

Raymond Oril & Co. have an interesting test on the Martha H. Hazlett farm in South Franklin Township, Washington County. This well has been drilled to the Fifth sand, from which formation it made a flow of 100 bbls. as soon as the sand was encountered. It is estimated this is a 30-bbl. well, and it will probably settle down to a 15-bbl. pumper. However, it has not been reported as completed.

Drilling in Southwest Pennsylvania

D. L. Shafer & Co. remain shut down at 850 feet in their test on the William Jones farm in Wayne Township, Greene County. The test of Willard Iams & Co. on the Willard Iams property in South Franklin Township, Washington County, has reached a depth of 650 feet in the process of drilling.

Schaffer & Co. has a rig standing on the Henry Schaffer farm in North Fayette Township, Allegheny County, for No. 3 well.

EASTERN PRODUCTION SESSION AT WELLSBORO

A provisional program has been completed for the spring meeting of the eastern district of the American Petroleum Institute's division of production to be held in the Wells Hotel at Wellsboro, Pa., May 13 and 14 next. J. French Robinson, general manager of the Lycoming Natural Gas Corp., is chairman of the district.

The program opens with a dinner Friday evening, May 13, after which presentation of technical papers and discussion begins. Efforts are being made to complete arrangements for motor trips Saturday, May 14, through the Wayne-Dundee, New York, and Tioga County, Pennsylvania, gas fields and the Bradford, Pa., oil fields, and Sunday, May 15, through the Finger Lake region of New York and Harrison State Park on Pine Creek, Pennsylvania.

The first paper is to be presented by Dr. K. C. Heald, Gulf Oil Co., Pittsburgh, Pa., on "Geophysics, and Its Practical Application." The paper will be discussed by Dave Carlton, Humble Oil & Refining Co., Houston, Tex.; Frank Brewster, Belmont Quadrangle Drilling Corp., Bradford, Pa., and Therman Myers, Penn United Gas Co., Wellsboro.

Paul D. Torrey, Bradford, will present a paper, "Geology of Northern Pennsylvania and New York," which will be discussed by J. Gaddess, Allegany Gas Co., Port Allegany, Pa.; Joseph Turner, Pennsylvania Power & Light Co., Wellsboro, and J. R. Reeves, Penn York Gas Co., Elmira, N. Y.

J. G. Montgomery, United Natural Gas Co., Oil City, Pa., will consider production records and nomenclature, with discussion led by Virgil F. Bowyer, Lycoming Natural Gas Co., Wellsboro. Discussion of the paper, "Summarization of Water and Air Flooding in the Bradford Oil Field," by K. B. Nowels, Forest Oil Corp., Bradford, will be led by R. D. Wyckoff, Gulf Research Laboratories, Pittsburgh.

Officers and members of the advisory committee will be elected at the close of discussion.

Unabated Rush for Prospecting Permits

Filings on Public Domain in Wyoming, New Mexico, Montana and Colorado Accept Unitization or Co-operative Development Condition

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Apr. 18.—The reopening of the public domain for prospecting for oil and gas is expected to result in the resumption of drilling on a number of wildcats in the Rocky Mountain States where extensions on permits were granted under provisions that drilling would be restricted. The new order makes possible the removal of these restrictions. Close to 200,000 acres have been filed upon in the Denver land office alone.

In New Mexico, R. D. Compton's No. 4 Brainard, in the Artesia area, was completed as a 25-bbl. well. Hobbs pipe line runs in March were 947,150 bbls. No new locations were reported.

In Colorado, Archuleta County is attracting some attention as a result of recent gas discoveries at shallow depths. The MacDeb well, near Aurora, is showing more gas. There were no completions and no new locations.

In Wyoming the Osage district had three completions and three new wells spudding. One well was started in West Mule Creek and another spudded in Fremont County.

In Montana, one well was abandoned in the Devil's Basin Field.

In Idaho a wildcat near Payette is reported showing for 1,000,000 feet of gas.

Filing on Public Domain

Applications for prospecting permits on the public domain continue to pour into the district land offices in all of the Rocky Mountain states. No tabulations have yet been made showing the extent of filings, but Walter Spencer, registrar of the Denver office, estimates that filings in his office alone aggregate somewhere between 150,000 and 200,000 acres. Many applications also have been filed in the Pueblo office, principally on land in the southwestern part of Colorado. Mr. Spencer expressed the opinion that filings in Wyoming and New Mexico, and possibly Montana, will cover a larger acreage than Colorado.

Applications are being made under the rules and regulations in Circular 672, which were in effect when the public domain was withdrawn from prospecting on March 13, 1929, except that the applicant has to make a stipulation to accompany the application agreeing to abide by the new regulations providing for unit operation or co-operative development. Drilling operations may begin at any time after a permit is issued and the unitization provision becomes effective if oil or gas is discovered. The applicant agrees that if a commercial discovery is made, the well will not be produced until a unit agreement is reached.

Many permits in effect when the withdrawal order was entered in 1929 were extended for two years with provisions that drilling should not take place for one year in some instances and two years in others. A number of wildcats which had been started on these permits in all of the Rocky Mountain states have been shut down since then. Many of these are structural tests which have reached important depths. The operators or permittees may be relieved of these restrictions upon the execution and filing of stipulations. Included in these areas are such important operations as those of the Continental Oil Co. in Jackson County, Colorado, where a commercial discovery has been made, on the Dolores structure in southwestern Colorado, where the Ohio Oil Co. has a well below 6,000 feet, on the Boundary Butte Dome in southeastern Utah, where affiliated interests drilled one well that brought in a new gas field, on the Wyoming structure in Lincoln County, Wyoming, where a well is standing at 2,000 feet, and on other structures scattered through the different states. The Mountain Fuel Supply Co. has had several rigs up in northern Moffat County for the past two years. There is an extensive area of public land in southeastern New Mexico which holds out favorable prospects due to the opening of the Hobbs and other pools in Lea County.

New Structures

Not only do the new regulations open the way for the resumption of drilling on existing permits, but many new structures have been filed upon following the reopening of the domain. Considerable geological work was done by the major companies during the period when prospecting was suspended and when applications could again be made, a number of rushes took place. For instance, one of the largest structures in Colorado in Garfield County, southwest of Glenwood Springs, was completely covered with filings within a short time after the public domain was restored to prospecting. Several companies participated in this rush, but the Midwest Refining Co. is said to have been the first to get in its applications. In Archuleta County where some gas has been found in some shallow wells rival applicants reached the ground and put up stakes within less than an hour of each other.

Some difficulties in applying the unit plan are bound to be encountered, but the Secretary of the Interior has been granted broad authority under which he can adjust these individual cases. An illustration is found in Lea County, New Mexico, where the government restricted drilling on a permit that offsets a producing pool.

Some new pools are almost certain to result, and some large pools already known to exist probably will be developed. One of these is the McCallum Dome in Jackson County, Colorado, where the Continental Oil Co. brought in its famous carbon dioxide well producing oil from the Muddy sand with the gas. This is a large structure which has not yet been tested to the Dakota, although that sand shows saturation at the outcrops. Three wells were being drilled when operations were suspended under the restricted drilling provision. It is understood the company has the option of awaiting the termination of the restriction, or filing the stipulation for unit operation. Since the one company controls practically the entire structure, the problem will not be a difficult one.

The removal of drilling restrictions on new permits will automatically restore the obligations to drill and it is evident wildcatting in the Rocky Mountain states is bound to receive a considerable impetus during the summer. Ability of small concerns and individuals to finance the operations will prove to be an important factor in determining the extent of the development.

NEW MEXICO

Pipe line runs from the Hobbs Pool in March aggregated 947,150 bbls., bringing the total since proration went into effect up to 21,250,829 bbls.

Lea County

Midwest Refining Co.'s No. 8 Turner, C NW SW Section 34-18-38, in the Hobbs Pool, is bottomed at 3,962 feet in lime at which depth 8⅝-inch was cemented with 150 sacks. Sandy lime was cored at 3,950-60 feet. This is expected to be the next completion. Same company's No. 29 State, C SW SW Section 10-19-38, is drilling at 2,915 feet in anhydrite and lime. It topped salt at 1,725 feet and brown lime at 2,890 feet and had a show of gas at 2,910 feet. Midwest's No. 8 Terry, C NW SW Section 10-19-38, is drilling at 1,200 feet in the red beds. The 16-inch was cemented at 204 feet.

Amerada Petroleum Corp.'s No. 1 Hardin, SW cor. Section 18-18-38, an outside well at the northern end of the pool, is drilling at 1,000 feet in the red beds.

Eddy County

New Mexico Oil Syndicate's No. 1 McClelland, C NW NE Section 22-22-23, 25 miles west of Carlsbad, a location made last December awaiting permission from the Department of the Interior to drill and subsequently abandoned for lack of authority to go ahead, has been reinstated following the reopening of the public domain for prospecting and drilling is expected to get under way within 30 days.

R. D. Compton's No. 4 Brainard, SE SE Section 5-18-27, Artesia area, has been completed at a total depth of 1,278 feet after plugging back 1 foot to shut off water which showed up in the last 6 inches of drilling. It is averaging 25 bbls. of oil and 1 bbl. of water per day. Top of the pay was encountered at 1,274 feet. It is in the vicinity of several producers on the Brainard tract.

Avalon Oil Co.'s No. 1 State (Paul) NE cor. SE Section 26-20-27, southwest of the Getty Pool, is drilling at 415 feet in lime and anhydrite and for the last 15 feet has had a smell of sulphur.

W. A. Scott's No. 1 Kaiser, NW SE Section 7-18-27, 2 miles west of the Compton completion, is ready to spud.

Grayburg Oil Co.'s No. 3 Burch, C SW NW Section 19-17-30, Jackson area, is drilling at 2,765 feet in lime.

DeBaca County

Landowners Oil Co.'s No. 1 McAdoo, SW cor. NE Section 16-1s-27, Buffalo Creek, is shut down at 4,702 feet to install new drilling line.

Matador Oil Co.'s No. 1 Woods, NE SW SW Section 6-4n-20, Salada Creek, which was taken over recently by George E. Montgomery, of Amarillo, for completion, is drilling at 3,935 feet in lime. It had a show of oil at 3,850-60 feet and a show of gas at 3,904 feet.

Curry County

G. W. Trout, and others' No. 1 Hart, NW SW NW Section 24-2n-31, is bottomed at 727 feet and underreaming 6⅝-inch to shut off salt water at 610-27 feet. This is being drilled for fresh water for a deep test to be put down in Section 19.

Chaves County

Warman Oil Trust's No. 1 Evans, N half, Section 15-14-25, Blackdom district, is shut down at 1,135 feet in lime for orders.

San Juan County

Kutz Canon Oil & Gas Co.'s No. 1 Day, SW cor. Section 20-28-10, Kutz Canon district, is shut down at 3,800 feet for drilling line. Gas was reported showing an increase at the bottom of the hole. It is believed to be just above the objective Point Lookout sand.

Continental Oil Co.'s No. 17 Santa Fe, C NE Section 2-29-19, Rattlesnake Dome, which was deepened to 6,985 feet after producing more than 360,000 bbls. of oil at 6,790 feet, swabbed approximately 50 bbls. of oil in 24 hours after plugging back. The black water is increasing. Same company's No. 24, SW NW SW Section 1-29-19, the second deep test, is bottomed at 7,053 feet and waiting for bit cones. Apparently, it has not yet reached the producing horizon in No. 17. Continental's No. 28, CNL SW Section 12-29-19, on the south end of structure, is bottomed at 794 feet. The 6⅝-inch is at 755 feet. This well will go only to the shallow sands.

COLORADO

Archuleta County

The area to the southeast of Pagosa Springs, in Archuleta County, just north of the New Mexico line, is receiving considerable attention as a result of several shallow discoveries made there and applications have been filed on a large acreage following the reopening of the public domain. Oil City Petroleum Co.'s No. 1 Russell, NW Section 35-33n-2e, which was reported last week showing considerable gas at 369 feet, was drilled deeper to 461 feet and encountered more gas in a sandy lime horizon. Gas has been found in three horizons in this well so far. It will be deepened a few feet, 2-inch tubing run and the well completed. It is on what is known as the Price Dome, and is just north of No. 1 Brooks, drilled by Standard Oil Co. of Colorado, which had a flow of several hundred thousand feet of gas at 235-47 feet. This company's No. 2 Brooks, NW cor. NE Section 2-32-2e, has been standing for some time at 100 feet due to difficulty in getting through a gravel formation. An effort will be made to drive down the pipe and another location will be made to the north and east. Same interests' No. 1 Fitzhugh, NW SE SW Section 34-33n-1e, on the Chromo Dome, which had a show for several barrels of oil and some gas at 549-67 feet, followed by water in the Dakota, is standing at 717 feet where it is making considerable gas from a lower sand. Efforts to shut off the water and test have been held up by heavy snows. This week the first truck to get in from Farmington reached the location and work is to be resumed as soon as possible.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, NE Section 7-4s-66, near Aurora, which was held up at 5,961 feet by underreamer lugs in the hole, has been deepened to 5,971 feet by driving the lugs ahead of the bit. There was a pronounced increase in gas, but no important increase in the quantity of oil showing. It was reported having 600 feet of oil standing in the hole, but officials deny the quantity is that large. Fishing has been resumed in an effort to get hold of the lugs. The hole is down to 3 inches, which makes progress slow.

Adams County

Hills Dome Lease Development's No. 1 Hills, SE cor. Section 27-3s-64, near Watkins, is bottomed at 4,025 feet and circulating in an effort to free 8¼-inch which froze at 4,000 feet. This test entered a zone showing some sand in shale at 3,860 feet and the quantity of sand continued to increase to 4,002 feet. It is believed the hole is bottomed in the beginning of the Hygiene series.

Weld County

Retter Oil Co.'s No. 1 Cronin, NW cor. SW Section 24-1n-66, is shut down at 420 feet with 6¼-inch cemented. Its No. 1 Smith, the deep test, has shown no change for the past two months.

Larimer County

Mayer Oil Co.'s No. 1 Reed, SW cor. NW Section 28-4n-69, Berthoud district, is drilling below 3,500 feet and carrying the 6⅝-inch.

Charles A. Culter and others' No. 1, SE Section 4-4n-70, West Berthoud, is drilling in very hard rock at 200 feet.

El Paso County

Colorado Springs Oil & Natural Gas Co.'s No. 2 Carson, NW NE NE Section 10-16-66, Fountain district, is drilling at

1,600 feet. The hole is standing up and 8¼-inch was not run. The Muddy is expected at 2,200 feet.

Fremont County

Canon Heights Oil Co.'s No. 2 Harding, NW SE NW Section 21-18-70, Orchard Park, north of Canon City, is bottomed at 3,124 feet and underreaming 6¼-inch. It was drilled to the Dakota sand at 2,505-30 feet by Continental Oil Co. and taken over by the Canon Heights company to test the Pennsylvanian.

Waterville Oil Co.'s No. 1 State, SE cor. NW Section 16-18-69, Phantom Canon, is cleaning out at 1,790 feet and lowering the 6¼-inch.

Park County

South Park Oil Co.'s No. 1 Milligan, NE cor. SE Section 13-8s-76, Jefferson district, is bottomed at 2,700 feet and drilling out cement after cementing cave.

Routt County

Mid-Colorado Petroleum Co.'s No. 1 Omholt, NE cor. SE Section 29-4n-87, Fish Creek, is preparing to resume at 1,700 feet after being shut down for the winter.

Rio Blanco County

California Co.'s No. 1 California-Raven, NW SE Section 30-2n-102, Rangely Dome, is drilling at 4,724 feet and probably is through or close to the bottom of the Sundance. The Weber sandstone of Pennsylvanian age is the objective.

WYOMING

Weston County

The Osage district in northeastern Wyoming, with three completions, three wells spudding and with the small local refineries running at capacity to meet an active demand for tractor fuel, is showing a considerable improvement in conditions. One dollar per barrel is the ruling price for crude in the field.

The best completion was Tug Oil Co.'s No. 1, NW cor. SW Section 15-46-64, which extends the West Osage Pool about half a mile west. It drilled sand at 3,145-51 feet and flowed 70 bbls. over night.

Egaso Operating Co.'s No. 16, SE cor. NE Section 17-46-63, in the shallow district on the east side of the field, will pump 3 bbls. per day from the sand at 402-14 feet.

The other completion was a surprise well, Wyoming Oil & Gas Co.'s No. 1, NW NE Section 6-46-63. It was being drilled in the yard of that company's refinery for water when it encountered a shale pocket that produced 25 bbls. daily.

Chadron-Osage Oil Co.'s No. 16, CWL NW SW Section 14-46-64, is spudding; Federal Oil Co.'s No. 2, CEL NE SE Section 15-46-64, is spudding; and Jones-Rice Syndicate's No. 2, CWL SW NE Section 21-46-63, is spudding.

Gose Oil Syndicate's No. 1, NE cor. Section 28-47-63, Soda Creek, is pulling the 4¾-inch from 5,020 feet preparatory to underreaming 6¼-inch and carrying it deeper. This operation was started in 1927.

Julius Peters and others' No. 1 Witzell, SE cor. NW Section 30-46-64, Fiddler Creek, is repairing rig to resume at 3,360 feet.

Niobrara County

Interstate Oil & Refining Co.'s No. 1-D, SE NE SE Section 35-40-61, West Mule Creek, is spudding.

Sheridan County

R. & D. Oil Co.'s No. 1 Mock, NW cor. SE Section 21-57-87, Smith Creek, is drilling at 1,400 feet.

Natrona County

Mutual Oil Syndicate's No. 2 Midway, C SW SE Section 14-35-79, Midway Dome, is drilling at 2,600 feet in an 11-inch hole.

Jarvis & McDonald's No. 1 Government, SE cor. Section 31-30-81, Spindletop, is preparing to run 8¼-inch below the Dakota. The Sundance at 1,050 feet is the objective.

Fremont County

E. F. Wiebolt and others' No. 2, Section 35-33-99, Bartram Gap, is spudding.

IDAHO

The Idaho Gas & Utilities Corp.'s No. 1 Lilly, NW SE Section 2-8n-5w, 2 miles east of Payette, is bottomed at 1,260 feet on top of a sand showing gas. A control head has been installed preliminary to drilling into the sand. The gas is estimated at 1,000,000 feet per day. Gas also was encountered at 1,080 feet. The location is 9 miles southwest of the Crystal Dome where the Ohio Oil Co. drilled a deep test last year. The Lilly well was started by the Consolidated Oil & Gas Co. and afterwards taken over by the Idaho Gas & Utilities Co. C. E. Bivens, of Denver, is president.

MONTANA

Carbon County

The Ohio Oil Co.'s No. 2 Montana Industrial, C NW SE Section 11-7s-21, Dry Creek, cemented 8⅝-inch at 4,343 feet and is waiting. Same company's No. 2 Robinson, C SE SE Section 3-7s-21, is drilling at 2,825 feet in brown shale, and its No. 1 Caldwell, near CEL Section 12-7s-22, is drilling at 1,385 feet in black shale. Carbon Oil & Gas Co.'s No. 1 McMinn, NW SW SW Section 7-7s-22, is drilling at 3,940 feet in black shale.

Ohio Oil Co.'s No. 1 Kuchinski, NW SE NE Section 15-7s-22, Golden Dome, is drilling at 5,735 feet in shale.

Midland Oil Syndicate's No. 1 Burger, SW cor. NW Section 24-6s-23, East Bridger, is spudding at 150 feet.

Liberty County

California Co.'s No. 1 Ross, NE SE NE Section 3-33-6e, Utopia district, is drilling at 3,210 feet, and People's Oil & Gas Co.'s No. 1 First National Bank, C SE NW Section 17-36-6e, Bear's Den, is bottomed at 2,000 feet and trying to lower 10-inch to fish for parted 8¼-inch.

Fergus County

Melton Corp.'s No. 1 Fenholt, SW cor. Section 24-21n-17, Winifred district, is drilling at 3,120 feet and carrying the 8¼-inch.

Musselshell County

Minnesota-Flatwillow Oil Co.'s No. 1, SW NE SW Section 25-11n-24, Devil's Basin, encountered water in the Quadrant formation and was abandoned at 1,335 feet.

Gallatin County

Montana Gas & Petroleum Corp.'s No. 1 Adams, SE cor. Section 35-2n-1e, Three Forks district, is drilling at 1,617 feet.

Toole County

Oregon Oil Syndicate's No. 1 Barthelote, SW NE SE Section 20-36-2e, Barthelote district, is drilling at 2,406 feet after setting casing on top of sand at 2,361 feet which proved to be only 2 feet thick.

UTAH

The Maude Ellen Oil Co.'s No. 1, NE NW SE Section 28-3s-21, Uinta County, which has been shut down for the winter at 2,314 feet in the Pennsylvanian, has crew on the ground ready to resume. It will underream and lower pipe for a water shutoff and continue to the Madison lime expected at 2,600 feet.

Legislation for Turner Valley Field

Tentative Measure Introduced by Alberta Government Preliminary to Voluntary Pooling Agreement. To Limit Gas Flow

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Apr. 16.—Pipe line runs for the Turner Valley Field in March showed an increase over both January and February, according to official figures. The total deliveries for March amounted to 71,533 bbls., compared with 67,789 bbls. in February and 68,793 bbls. in January. Royalite Oil Co. is still the largest producing company in the field, the ranking major producers being Southern Lowery, Mercury Oils, Mayland Oil Co., Merland Oil Co., Sterling Pacific Oil Co. and Model Oils. Calmont Oils, Ltd., previously delivering to Imperial Oil, Ltd., is now delivering to Regal Oil & Refining Co.

Deliveries to Imperial Oil, Ltd., aggregated 64,471 bbls. this total including 12,968 bbls. of crude naphtha, 44,415 bbls. of discolored naphtha and 7,088 bbls. of light crude oil. These figures compare with 13,267 bbls. of crude naphtha, 40,119 bbls. of discolored naphtha and 7,833 bbls. of light crude in February, a total of 61,219 bbls. Deliveries to Regal Oil & Refining Co. in March amounted to 4,475 bbls., as against 5,572 the previous month; and Bell Refining Co. took 2,587 bbls. as against 998 bbls. in February.

Turner Valley Conservation

Legislation to provide for a tentative measure of conservation of the Turner Valley Field was introduced by the Alberta government, following the failure of the various interests concerned to agree upon a voluntary scheme for unit operation.

The government legislation provides for a further period of testing the field, investigating the question of compensation for reduced naphtha production, and negotiating for a voluntary pooling agreement. Provision is made for the appointment of a board of three members to take control of the field during the six-month period. This board will include Dr. R. C. Wallace, president of the University of Alberta, who was chairman of the recent conference on unit operation; Judge A. A. Carpenter, chairman of the Alberta Public Utilities Commission, and an engineering expert to be appointed by the Alberta government.

This board will have authority immediately to limit the gas flow of the Turner Valley to 200,000,000 feet a day. The board will assume control and direction of the field, define areas, engage engineers and other experts for a comprehensive examination of the gas producing region and fix the production at any or all wells. It will also have authority at any time it may be deemed necessary to further restrict the open flow to 100,000,000 feet a day. Not later than October 1, 1932, the board will hold a public inquiry as to the valuation, benefits and "net detriment" encountered by producing and other interests in the field, in order to determine a basis of compensation and distribution of revenue.

If, at the expiration of six months from April 1, 1932, or at an earlier date, the board finds itself unable to bring about unified operation of all wells by means of a voluntary pooling agreement, it will report back to the government and recommend any pooling scheme it may consider advisable.

A special session of the Alberta legislation will be called, probably in December, to approve a voluntary pooling agreement if one is reached or formally adopt a scheme recommended by the board.

A clause in the bill originally proposed provided that any public utility company marketing Turner Valley gas pay a rate of 2 cents per 1,000 feet into a compensation fund to be used to compensate producing or other interests concerned for any net detriment suffered by reason of the restrictions on production. This clause was, however, deleted from the bill, though it is intended that any permanent policy worked out will provide some measure of compensation.

It is expected that the board will be fully constituted some time this month. Testing of the field will then be commenced with the flow restricted to 200,000,000 feet a day. Following completion of the tests, which are expected to require three months, some time will be spent in determining the extent of benefit or detriment to the various interests resulting from the contemplated restrictions and a fair basis of compensation. In the meantime, negotiations for a voluntary pooling agreement will be carried on by the board, as a preferable alternative to an arbitrary scheme enacted by the government.

Imperial Quota Reduced

For the first 10 days of April, Turner Valley producers delivering naphtha to Imperial Oil, Ltd., were restricted to a reduced quota basis. Explaining this step, J. H. McLeod, production manager of Imperial Oil, Ltd., made the following statement:

"During the discussion of the proposed conservation, some of the operators contended that it might be impossible to make the government test of the field due to the shortage of tankage and, at that time, a representative of Imperial Oil, Ltd., promised to do all possible to purchase from the producers, who now sell to the Imperial, sufficient naphtha to permit the government to make the tests without delay.

"In order to fulfill this promise it is necessary to curtail shipments until such a time as the test actually begins. It will be understood that during the testing period wells will be produced 100 per cent for naphtha and under these conditions the total production might be greater than the Imperial company would be prepared to handle at the present time. It is for this reason alone that the reduced quota for the first 10 days of April was put into effect."

North Turner Valley

In the North Turner Valley, Model Oils, Ltd., of Calgary has started work cleaning out and deepening the unfinished Anaconda Oil Co.'s No. 1 in LSD 16, Section 22-20-3w5. Arrangements whereby Model Oils, Ltd., was to take over and complete the well were made last December. Anaconda's No. 1 started drilling several years ago, but has been standing at 3,575 feet. It is a half mile north of Model Oils' No. 1, in LSD 8, same section, which, with 5,068 bbls. delivered light crude production in March is rated one of the best and steadiest producers in the field. Model's No. 1, which got production at a depth of more than 5,500 feet, started as a naphtha producer but speedily graded down to light crude, with a small gas flow. Foothills Oil & Gas Co.'s No. 1, producing crude naphtha from the lime, offsets Anaconda's No. 1 to the northeast. It is expected that the latter will get production in the lime between 5,500 and 5,800 feet.

South Turner Valley

In the Mercury tract, South Turner Valley, Hylo Oils' No. 1, LSD 12, Section 4-19-2w5, is cleaning out a second lot of cement which failed to set, apparently due to crude oil in the hole. A third attempt will be made to cement in the top of the lime at 5,501 feet. Crude oil production is being taken from the Home sand.

Miracle Oils' No. 3, is reported resuming work. The test is at 6,150 feet with tools in the hole following a fire some weeks ago which destroyed the derrick. A new derrick is being put in place and efforts will be made to get out the tools. Samples of crude oil from the lime at 6,150 feet show a greenish crude, about 45 gravity; and possibilities of a flowing well when the hole is cleared are indicated.

Central Turner Valley

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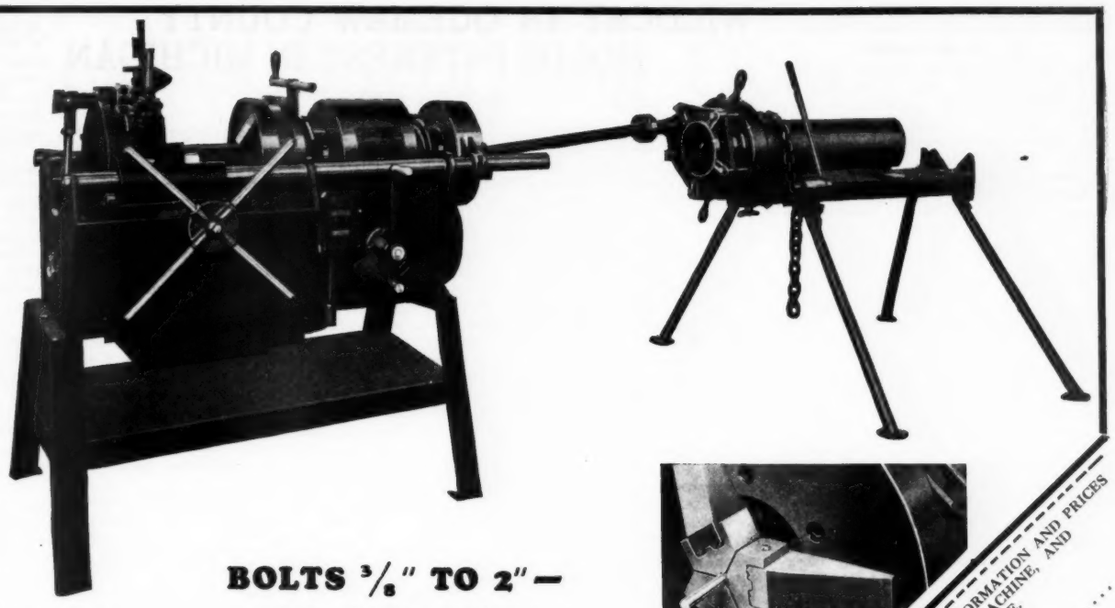

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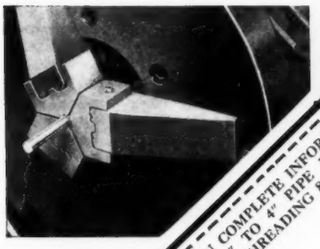

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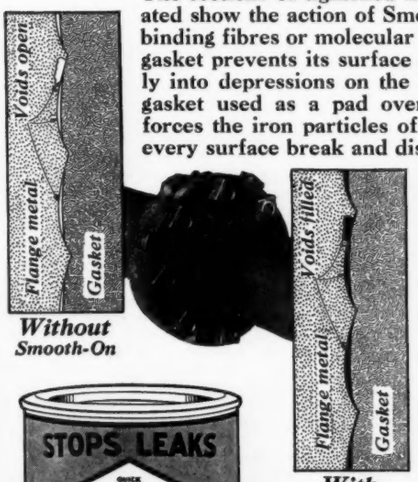

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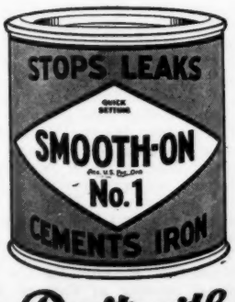

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3w5, is cleaning out and bailing iron, which interfered with running casing.

Tests in the Foothills

On the Fisher Creek structure, Cotton Belt Mines' No. 1, LSD 5, Section 21-21-4w5, bottoming at 2,625 feet, has run 6¼-inch casing to below 2,400 feet. The test was left with considerable open hole, which resulted in caving. It is expected to resume actual drilling this month.

Farther north, on the south end of the Moose Mountain structure, Elbow Oils' No. 1, LSD 11, Section 35-22-5w5, is drilling out cement. A bad water crevice was found at 3,342 feet and the hole was plugged back for 450 feet.

Twin River Test

On the Twin River structure, southeast of Lethbridge, Parco Oil Co.'s No. 1, LSD 16, Section 34-1-20w4, has tested production from the Madison lime following a shot some time ago. The yield before the shot was around 10 bbls. a day, and this was not materially increased. A larger shot will be tried higher in the formation where it is tighter. The producing horizon is in the top of the Madison between 3,870 and 3,890 feet.

Alberta Drilling Prospects

The return of spring is likely to be followed by resumption of drilling operations on a number of unfinished Alberta tests. In the border areas the most important of these tests is probably Hudson's Bay Oil & Gas Co.'s No. 1 Keho, LSD 2, Section 17-11-22w4, on the Keho Lake structure northwest of Lethbridge. This has been standing cemented at 4,800 feet. Before cementing back, a promising oil show was struck in the top of the Madison at 4,920 feet. Later the tools were lost, and these will have to be sidetracked before the hole is drilled into the producing horizon. Two oil horizons in the Benton shale between 3,680 and 3,776 feet showed a potential production of around 60 bbls., but the well was continued for a test of the deeper horizons.

East of Coutts, Mayland Southern's No. 1, LSD 13, Section 4-1-9w4, on the Alberta end of the Reserve Dome, will resume at 2,750 feet after the winter shutdown. This test is already a commercial gasser and is deepening for oil which may be struck in a few hundred feet. On the Milk River structure, Commonwealth Petroleum's No. 1, LSD 8, Section 9-3-15w4, shut down some weeks ago after coring through the Devonian lime into shale at 5,240 feet, may be further tested, though it has already reached what is probably a record geological depth for drilling in Alberta.

Lethbridge Area

There is some uncertainty as to what further work will be done in the Lethbridge area. The Twin River, Texas Imperial and Hudson's Bay-Keho wells have all got shows of oil in the top of the Madison, along a southeast and northwest line extending between 50 and 75 miles from a point just north of the international boundary. Of these wells, Parco's No. 1 Twin River looks like a small producer, Texas-Imperial's No. 1 has been abandoned owing to salt water, and Hudson's Bay-Keho No. 1 is waiting to be drilled in. The Texas Company of Canada has definitely announced its intention of doing no further work at present on the Lethbridge structure, but interests which hold extensive acreage may arrange for a test by some other company in the same general area.

Madison Oils, Ltd., of Calgary, which has an unfinished test on the Beaver Dome in LSD 10, Section 24-2-11w4, standing at about 1,900 feet, is reported arranging for a new test on another Southern or Central Alberta structure. Madison's No. 1 will be left standing. The company holds considerable border acreage near Mayland Southern's No. 1 and Parco's No. 1.

Prospective drilling in the foothills includes a new test by Patrick Oils, Ltd., of Calgary in the old Oil City Field near Waterton Lakes. In the Pincher Creek district, Weymarn Petroleums' No. 2, LSD 5, Section 7-6-1w5, may deepen from 3,900 feet. The Watson structure, which has been favorably geologized but has never been tested to any depth, may be given a serious tryout by British capital. Further north, Moose Oils' No. 1, LSD 16, Section 29-22-6w5, may deepen from 2,835 feet; at this depth it is well into the Devonian lime.

Moose Mountain

The Moose Mountain structure will have probably three active tests. Cotton Belt Mines' No. 1 and Elbow Oils' No. 1 are already at work, and Graystone Petroleums' No. 1, LSD 9, Section 34-23-5w5, is down 4,225 feet and should show definite results for this season's drilling. Still farther north, Cartier-Majestic's No. 1, LSD 3, Section 36-31-7w5, a joint test by several companies, is expected to resume this spring.

Work in the northern areas includes probable completion of Crudome Oils' No. 1, LSD 16, Section 24-72-25w4, at Mirror Landing and some drilling by the newly organized Athadome Oils, Ltd., near Smith, on the Athabaska.

Some of the older foothill areas, such as the Sinclair-Highwood, Morley Reserve and original Waite Valley structures, show no signs of activity. The East Central Alberta areas, Wainwright and Ribstone, are also inactive. It is understood Northwestern Utilities, Ltd., of Edmonton, will drill two tests for gas in the Kinsella Field.

Turner Valley Companies

Shareholders of Royalite Oil Co. held their annual meeting at Calgary when the following officers were elected: President, J. H. McLeod; directors, A. M. McQueen, Alex Hannah, C. M. Moore, W. S. Herron. T. E. Burns succeeded E. F. Howard as secretary.

Shareholders of Foothills Oil & Gas Co., also an Imperial subsidiary, elected the following officers: President, Alexander Hannah; directors, J. H. McLeod, C. M. Moore, E. H. Teagle and T. E. Burns, the latter being secretary.

Fort Norman Wells

Ronald W. McKinnon of Imperial Oil, Ltd., has returned from a trip of inspection to the company's shut-in wells in the far north oil field on the Mackenzie River below Fort Norman. He has made a detailed report to his company, and on this will depend the future plans of Imperial Oil, Ltd., for the reopening and further development of the field.

Mr. McKinnon made the trip to and from Fort Norman by airplane. The field is approximately 53 miles north of Fort Norman, and this distance was traversed by dog team. Mr. McKinnon left Fort Norman at 7 a. m. one day and reached the field at 4 p. m. the next day. This is fairly fast time for a dog team, but took longer than the trip of 1,000 air miles by plane.

Mr. McKinnon found the Imperial wells, shut in for the past six years, in excellent condition. When reopened, they both flowed crude oil. A boiler at the abandoned well on Bear Island showed little rust though it had lain in the open for nine years. The temperature registered from 15 to 35 degrees below zero. Except for the new wireless station, Fort Norman has changed little in six years. It has a population of 28 white persons, a number of Indians and a good many dogs. There is no doctor but Mrs. S. G. Douglas, wife of the Northern Trading Co. manager, a graduate of Edmonton Hospital, looks after the ills of the population.

Fort Norman is at the junction of the Mackenzie and Bear Rivers. The latter provides an 80-mile waterway to Great Bear Lake, on the eastern shore of which is the new mining area. Gold, silver and radium-bearing pitchblende have been discovered, and it is anticipated that the Fort Norman Field will provide cheaper gasoline and fuel oil for mining operations and transportation.

Red Coulee Field

The Red Coulee Field, southern Alberta, reported a total crude production in February from the Alberta end of the field of 3,335 bbls. On the Alberta end of the structure, Devonshire Petroleums' No. 1, LSD 3, Section 10-1-16w4, is reported underreaming below 1,180 feet, preparatory to deepening.

On the Montana end of the structure, Askalta Oils' No. 3 is reported working on derrick for a new test offsetting its two producers.

Manitoba Gas Test

In the Manitou district, southwestern Manitoba, Commonwealth Petroleums' No. 2, LSD 2, Section 26-2-9-wPM, is shut down at around 1,800 feet, waiting for a new cable.

New International Structure

Geological and geophysical work carried on recently by J. T. Wilson of Lancashire Oils, Ltd., is reported to indicate the existence of an international structure connecting the Bellingham area in the northern part of Washington state with the Sumas-Abbotsford structure in southern British Columbia. The investigations indicate an interesting structure at Goshen, near the international boundary, where a new test may be started. Lancashire Oils' No. 1, originally started by the Sumas Oil Co., is located in Section 22-19-ECM and has been carried to 800 feet.

Alberta Pacific Meeting

Shareholders of Alberta Pacific Consolidated Oils, Ltd., held their annual meeting recently at Calgary when the following directors were elected: Dr. A. B. Singleton, T. A. Hornibrook, G. M. Bell, T. M. Carlyle, Dr. W. Hackney, H. A. Howard, F. E. Spooner and R. W. Ward. Doctor Singleton is president. The company is planning to discontinue active drilling operations for the time being and to widen its operations to include natural resources other than gas and oil. Tenative arrangements with the Frontier Development Co., subsidiary of the Canadian Exploration Co., whereby the Alberta Pacific company was to drill on Frontier acreage, have been terminated by agreement, after the drilling of two tests which failed to secure production.

Ontario Drilling

In the Dawn Field, Lambton County, Ontario, Dawn Oil & Gas Co.'s No. 1, Lot 25, Concession 9, Sombra, is drilling in salt below 1,885 feet.

In Brooke Township, Lambton County, Michigan-Pacific Oil & Gas Co.'s No. 1, Lot 10, Concession 12, is reported drilling below 2,300 feet.

Fabyan Petroleum Operations

It is announced that the death recently of R. E. Williams, president and general manager of Fabyan Petroleums, Ltd., of Vancouver will not interfere with the company's plans for development of its holdings in the Fabyan-Wainwright area in East Central Alberta. R. W. Jones of Edmonton was elected president and Vice President F. W. Williams was named managing director. Charles Bailey and R. E. Williams, Jr., were elected to the board.

New Pipe Line Project

An Alberta charter was recently issued to Coutts Pipe Line Co., with authorized capitalization of 20,000 no par shares and head office at Calgary, Alberta. It is understood the new company plans to build a pipe line to deliver crude from the Montana and Red Coulee Fields to the refinery of Maple Leaf Petroleums, Ltd., at Coutts, Alberta.

WILDCAT IN OGEMAW COUNTY HOLDS INTEREST IN MICHIGAN

By George A. Whitney

MOUNT PLEASANT, Mich., Apr. 18. Dundee formation has been topped by the Mellon-Pollock Oil Co. in its No. 3 John Brief farm, N half SW, Section 22, Vernon Township, Isabella County, between Mount Pleasant and Clare, and indicates a good producer when drilling is completed. This area has been productive of both oil and gas. Another well of much interest is being drilled by Frank L. Maire and others of Lima, Ohio, on the Earl F. Wilson estate, NE SE NE, Section 12, Gilmore Township, Isabella County, which has made a showing of both oil and gas in the Dundee, and if a commercial producer will add considerable desirable territory in the central Michigan area.

The daily average production of the Mount Pleasant Field during the past week was reported at 18,000 bbls., the bulk of which comes from the East Pool, in Greendale Township, Midland County.

Other wells under way that have reached depths below 2,000 feet are becoming interesting to the industry. W. L. McClanahan's No. 2 Morrison, NW SW SE, Section 10, Greendale Township, Midland County, at last report was at 3,200 feet; No. 3, same farm, at 3,300 feet and No. 4 at 3,450 feet, and No. 5 A. G. Struble, SE NE SW, Section 10, same township, around 1,600 feet.

The Pure Oil Co. has four wells that should reach the pay sand in several days in the same township, No. 1 Pringle heirs, SW NW, Section 4, at around 2,500 feet; No. 3 Mullett, NW NE NE, Section 15; No. 2 Emma O. Reed, SE NW SE, Section 10, and No. 3 same farm, at around 2,000 feet.

New Wells Started

New wells started drilling are numerous. The Pure Oil Co. is drilling B-3 Iosco Land Co., NW W half NW, Section 16; No. B-3 A. Barnard, SW NW SW, Section 10; Nos. A-2 Bernard, SE, Section 8; No. 1 T. E. McCann, SE SE NE, Section 7. Michigan Oil & Gas Co. is drilling No. 1 Ira Bond, E half W half NE, Section 12; Talbot Oil Co. is drilling No. C-2 State of Michigan land, NW SE SE, Section 10; and Haskell, Conover & Co. are drilling No. 1 E. L. Rhenschnider, NW SW SE, Section 14, all in Greendale Township, Midland County. W. Hunter Atha is drilling a wildcat 660 feet from the south and west lines of the Chemical State Savings Bank property, SW SE, Section 21, Ingersoll Township, also in Midland County.

State permits have been issued as follows: In Greendale Township, Midland County, to the Columbia Oil & Gas Co., for No. 1 well, 990 feet from the north line and 330 feet from the west line of William H. Hill & Co. tract, E half W half NE, Section 16; and Braden-Sanders Co., for No. 1 in the northwest corner of the Kate Stapleton, NW NW NE, Section 13, Greendale Township. W. L. McClanahan secured a permit for No. 6 A. G. Struble, SE NE SE, Section 10, and also for No. 1 Dan Johnson farm, NW SE SW, Section 10, same township. Rig for No. 6 A. G. Struble, is already on the ground.

Scott Stammler secured a permit for No. 2 in the southwest corner of the William N. Wright, SW SE SE, Section 18, Volinia Township, Cass County.

Mellon-Pollock Oil Co. started the drill at their second test, 990 feet from the south line and 330 feet from the west line of the Lewis Thayer, NW SW SE, Section 22, Vernon Township, Isabella County.

Ogemaw Wildcat

The wildcat of the Pure Oil Co. on the William T. Yeo, NE NE, Section 2, Horton Township, Ogemaw County, continues to hold the attention of operators. This test when drilled into the lower Monroe formation was reported to be flowing 10 bbls. of crude a day from 3,600 feet. In the opinion of veteran oil field followers, Michigan has yet to "hit" its big producing formation. The Ogemaw test is especially interesting as the first Monroe producing well in the State. The Pure Oil Co. is contemplating drilling the test deeper. Considerable drilling activity in the area is predicted by operators although the gas has high sulphur content; the pressure on the test is reported fairly strong. Deeper drilling might open another Trenton lime oil field, similar to that in the old Lima Field of northwestern Ohio, although at a much lesser depth. The theory is that in the north Peninsula, the Trenton will be found at comparatively shallow depths. Many years ago a well was drilled on Michipicoten Island, in Lake Superior, farther north, that had an oil showing around 1,200 feet. It was drilled by the Van Vleck Brothers, who were old Lima Field operators.

Tiffin Field Is Surprising Operators

Indications of Pool in Seneca County Start Drilling. Dozen Completions in Central Ohio. New Campaign in Horse Cave Field

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Apr. 18.—In the old Lima Field of northwestern Ohio, no completions were reported, although a few are nearing the Trenton formation. An improvement in activity is about due for the old field where there is still much undeveloped acreage.

The Tiffin Field, in Seneca County, is surprising the operators, as the county was supposed to be about done so far as oil wells of a commercial size are concerned. Most of the recent work in the county was for shallow gas, until J. H. Murphy & Sons drilled No. 3 on the Mary Getuldig farm, Section 11, Hopewell Township, Seneca County, in March, which was reported as better than 100 bbls., and is said to have produced close to 5,000 bbls. since its completion. M. R. McPheron, Lima, Ohio, operator, started a well on the Frank Fox farm, the location being approximately 500 feet from the Getuldig well which was brought in with a reported production of around 500 bbls. Oil sprayed over fields for a quarter mile when the well was shot. A steady flow of oil continued for several hours and the well has since flowed at intervals. Four tanks on the lease were connected with the lines of the Buckeye Pipe Line Co. The bringing in of the Fox well and the Getludig indicates there is a pool in the immediate area and it will be drilled as rapidly as possible. Another well will be started at once on the Fox farm, and J. H. Murphy & Sons are drilling two wells in the immediate vicinity, one on the Ray Knepper farm, Section 11, Hopewell Township, and the other on the Fay E. Sparks farm, same section.

CENTRAL OHIO

An even dozen completions were reported from the Central Ohio Field, of which three were producers with an initial of 31 bbls.; seven gas wells and one dry hole, a fairly good increase over the previous week.

In Medina County, the Oko Oil & Gas Co.'s No. 25 Henry Essig farm, Lot 3, Chatham Township, is reported good for 10 bbls. initially from the Berea sand from 337-93 feet.

In Coshocton County, Whittmer-McClay's test on the R. L. Rine farm, Section 6, Pike Township, was a dry hole at a total depth of 2,965 feet. The Millersberg Gas, Light & Coke Co.'s No. 3 Nick Loer farm, Lot 10, Mill Creek Township, was a light gas well from 794-823 feet.

In Summitt County, Richfield Township, Barnhart and others' test on the M. G. and C. O. Osborn farm, Section 2, which has been shut down for some time, is reported completed as a small gas producer from 3,382-3,445 feet.

In Muskingum County, Union Township, the Atha Oil Co. found a dry hole on the Jacob S. Morrison farm, Section 15, in the Niagara lime at 3,065 feet. In Brush Creek Township, Hopewell Gas & Fuel Co. made a location for No. 3 Daniel Weaver farm, Section 10. The Pure Oil Co. has a location for a second test on the Scott-Hammond farm, Section 3, same township, and at last report the Fritz Oil & Gas Co. had reached 4,350 feet in No. 2 Edward Middleton farm, Section 10, same township.

In Athens County, Clyde Cody's No. 4 Charles Ackley farm, in fractional Section 6, Carthage Township, which has been shut down for some time, is completed as a dry hole.

In Tuscarawas County, Washington Township, Oxford Oil & Gas Co. has a rig in for a second test on the Martha Carroll farm, Sections 32 and 33.

In Stark County, Jackson Township, the East Ohio Gas Co. brought in a nice gas well in No. 1 on the Brainard K. Pry farm, in the Clinton lime from 4,350-75 feet. Brendall and others struck a nice gas well in No. 7, Lake Cable Co.'s land, Section 14, same township, from 4,373-4,403 feet, also a fairly good gas well in No. 2 C. and M. Yearkey farm, Section 21, same township, from 4,259-86 feet.

In Fairfield County, Pleasants Township, the City Natural Gas Works is drilling No. 5 Henry Hartman farm, Section 23.

In Guernsey County, Cambridge Township, Jewell and others' No. 1 Charles H. Scott farm, Section 1, has a very light showing of oil, estimated at 1 bbl. from the Berea sand at a total depth of 1,336 feet. East Ohio Gas Co. is drilling No. 3 Clarence Dillon farm, Section 10, Wheeling Township, same county. E. C. Quinlan and others have a rig on the A. K. and W. E. Shearer farm, Section 5, Monroe Township, same county.

INDIANA

The Indiana Field makes a better showing than for some time. Wabash Public Service Co. is starting No. 3 on the G. B. Allen farm, NE, Section 22, Columbia Township, Gibson County, which recently brought in a gas well with 7,000,000 feet, 1,120 feet from the south line of the farm and 230 feet from the west line. Ewing R. Emison abandoned his No. 2 on the L. Jenkins farm, NE, Section 13, Center Township, same county.

P. C. Andrews made another good oil strike in his No. 11 well, 450 feet from the south line and 150 feet from the west line of the E. Loveless farm, NE, Section 23, Logan Township, Pike County, at from 1,203-1,354 feet, after a 100-quart shot, with an initial production of 55 bbls.

Wyman & Brown's test on the John Thompson farm, in Curry Township, Sullivan County, is a fair gas producer, and same parties are drilling No. 1 on the Lawrence Putnam farm, same township.

Daugherty and others drilled a dry hole on the Phillips heirs' farm, in Huff Township, Spencer County. E. M. Treat Co. is drilling a second test on the Catherine Bretz farm, Section 3, Ohio Township, same county.

Bolyard and others found a dry hole on the Margaret Taylor farm, SW, Section 18, Anderson Township, Perry County. W. S. M. Hughes is drilling No. 1 Cassidy farm, west of the Bristow Pool, same county. Conyers & Bugg are drilling No. 2 Alvin Franchville farm, NW, Section 30, Clark Township, same county.

American Industrial Gas Corp. found a dry hole in No. 1 John Beneker farm, SW, Section 27, Highland Township, Franklin County, at 2,221 feet. Same company is drilling No. 1 Johnnie Jenks farm, Section 7, Laurel Township, same county.

C. P. Ernie and others are delayed by a fishing job on the Arthur Beasley farm, SE, Section 32, Sterling Township, Crawford County.

In Rush County, Stout Brothers drilled a light gas well near or north of the town of Carthage, on an unknown farm.

Knightstown Natural Gas Co. reports a dry hole in a second test on the Ramsey farm, south of Franklin, in Hancock County.

American Industrial Gas Corp. is drilling on the H. Lafuze farm, NW, Section 30, Harrison Township, Union County, and the same company is drilling on the Samuel W. Hall farm, Section 21, Otter Creek Township, Ripley County.

ILLINOIS

Eleven drilling wells in eight counties in Illinois are still shut down and have been for quite a long period and probably will not be completed before the early summer. One completion has been reported, which is the Johnson Oil Co.'s No. 1 well, 2,640 feet from the north line and 200 feet from the east line of the E. H. Smiley farm, NW, Section 18, O'Fallon area, in St. Clair County in the southwestern part of the State.

In Dupo townsite, Sugar Loaf Township, St. Clair County, Coleman and Smith abandoned No. 1 Thomas Wright, Section 21, also No. 1 M. A. Fullerton, same section. Lon Coleman abandoned his No. 1 on the Winterhoff & Le Compte lots in Dupo townsite, Section 21 Sugar Loaf Township.

W. M. Bell and others abandoned their No. 1 Lewis J. Armstrong farm, in Friendsville Township, Wabash County, owing to water breaking into the well.

Phipps and others abandoned their No. 1 C. A. Davis farm, SE, Section 24, Southwest Township, Crawford County, owing to water trouble.

Ava Oil & Gas Co. abandoned its Nos. 1, 2, 3 and 4 on the High School property, in the NE, Section 28, Sugar Loaf Township, St. Clair County. St. Clair Oil & Gas Co. abandoned No. 2 Hall & Weihl lots, also in the SE, Section 28, also pulled out No. 1 Hall-Wallace-Dyroff lots, in the same quarter section.

Minter-Goethe and others drilled to 150 feet on the Tim Merigan property, Section 34, Fosterburg Township, Madison County, then abandoned the test, after being idle for many months.

KENTUCKY

The Horse Cave area of the west central portion of Kentucky is in line for a drilling campaign, the territory being shallow from 600 to around 900 feet and the wells average very good, in fact better than some of the deeper fields over the State and similar to that area known as the Owensboro Field of Ohio, Daviess, McLean, Hancock and Henderson Counties. The productive Legrande Field of Hart County is reported shut down so far as sale of oil is concerned and operators say they will not sell any more production until the price is placed on the Mid-Continent basis and division order. The Logsdon Valley Pool, near Munfordville, in Hart County, is on this base and getting the price paid by Carter Oil Co., and Stanolind Crude Oil Purchasing Co., for Mid-Continent oil. Most of the oil produced in the Logsdon Valley Pool is run by the Green River Pipe Line Co., and loaded in tank cars at a loading rack in Munfordville, and all goes to the Standard Oil Co. of Ohio's Latonia refinery.

The April 1 actual pipe line runs to storage, for proration purposes from the wells now producing in the Logsdon Valley Pool, was 5,337 bbls. daily. About 1,500 acres have already proven good for oil production in this pool and about the same amount of acreage for gas only. Both oil and gas are coming from the Corniferous sand, just below the Devonian shale.

The first well (discovery) was drilled by B. F. Wilson and L. C. Young, in Hart County, and the second test was by Norris & Davis, of Glasgow on the McKinney farm; the third test being made by H. Z. Clark and associates on the Legrande school lands. Since the discovery well the H. Z. Clark interests have drilled 90 wells in the county, before purchasing the 35 producing wells from the L. C. Young interests and other drilled and undrilled properties in the Legrade area. The Legrande Pool crude to a large extent is being taken by the Simrall Refining Corp., Stoll Oil Refining Co. and Producers Pipe Line Co.

Late Completions

In the Legrande Pool of Hart County, the Rivers Oil Co. and Thomas Wittmer's No. 13 W. E. Payton farm, producing 25 bbls. initially. H. Z. Clark and others' No. 9 Green Whitlow farm, produced an initial of 200 bbls. Rivers Oil Co. and H. Z. Clark's No. 3 Forest Handy farm, produced 75 bbls. the first 24 hours. L. C. Young's No. 2 W. B. Perkins farm, good for 240 bbls. initially, and his No. 2 Shaw farm, 50 bbls. Anchor Oil & Gas Co.'s No. 2 Alice Payton farm, produced 195 bbls. the first 24 hours, while Carpenter & Frost's No. 3 Payton farm, is good for 100 bbls. initially.

Among the drilling wells in the Legrande Pool at the present time are: Norris & Davis' No. 7 Ross farm, around 450 feet; H. Z. Clark and others' No. 3 Dilley farm, around 300 feet; H. Z. Clark and Anna K. Wilson, drilling No. 4 John Gillock farm; Carpenter & Frost, drilling No. 4 Peyton farm, around 400 feet; Lafferty Brothers, drilling around 700 feet on No. 5 Brooks farm; John Wright and Anna K. Wilson, drilling No. 7 Edwards farm, around 500 feet; M. F. Snyder and others, drilling No. 9 M. Richardson farm, around 650 feet.

Knapp and Nourse, of Henderson, Ky., are drilling their No. 1 Harlow farm in the new pool in Barren County, just south of Glasgow Junction. This pool was opened by J. Lynn Knapp in his discovery well, No. 1 Whittle farm, in the Corniferous sand and a few more wells will show the operators what this area looks like. Mr. Knapp sold an interest in this discovery and his 1,100-acre block to H. Z. Clark and his associates and this block will be immediately tested by them jointly. Young Mr. Knapp is the son of John Knapp, who has been Kentucky superintendent for a number of years for Joseph Hartman, of Pittsburgh, Pa. (Imperial Oil & Gas Products Co.) and is the first pool opened to his credit.

In the Bonneville Pool, in northwestern part of Hart County, the Mud Branch Oil & Gas Co.'s No. 2 on the Mrs. Emmitt Seymour farm, is rated at 35 bbls. initially with Nos. 3 and 4 drilling.

Carpenter & Frost, Hart County operators are drilling a wildcat test on Big Sinking, Hart County, west of Munfordville, and Roy Mace of Winchester, Ky., is also drilling one, both wells being on a large block assembled by the Eastern Gulf Oil Co., and on a pronounced structure. Some of the acreage was sold to these operators to get the structure tested immediately and these two wells are being watched closely by oil men. Carpenter & Frost are also drilling on the Garvin farm, out of part of the Eastern Gulf Oil Co. holdings, just south of Green River and also south of the Logsdon Valley Pool. The well encountered about 1,000,000 feet of gas at 545 feet, and is checking closely with the producers north of the river and will mean about a mile extension to the present pool if they get an oil well in the Corniferous.

Hupp & Duff are drilling No. 10 Jaggers farm, just north of the Cedar Grove Church, and the Munfordville Oil & Gas Co. is drilling No. 1 on the Puckett farm, both these operations being in the Logsdon Valley Pool.

H. Z. Clark is drilling on the Tommy

Johns 100 acres, secured from the Eastern Gulf Oil Co., southwest of the Logsdon Valley Pool, about 3 miles and about a mile north and west of a Corniferous gas well drilled on the Bush farm by H. Z. Clark and associates last year. This well was 1,058 feet deep and showed 300,000 feet of gas with 350 pounds rock pressure and was completed and cemented as a gas well, and it looks as though the Johns farm well may open another oil pool along Green River in Hart County.

Reports from Grayson County are that Dewees and others' test on the Joe Wheeler farm, in the eastern part of the county, was a dry hole.

In Ohio County, D. J. White and others' No. 3 on the Lafe Payne 217 acres, in the Haynesville Pool, produced 10 bbls. initially.

In Hancock County, Pellville Field, the Sand Petroleum, Inc., drilled in a nice gas well in the southeast corner of the Jeff Williamson farm, the initial test for that farm.

The Ohio Oil Co. reports a dry hole near Greenville, Muhlenberg County, on the W. C. Dukes farm, which was drilled to a total depth of 1,900 feet.

Gardenhire & Bevill drilled in their test on the Lafe Wilson farm, in Owen Hollow, Hart County, which struck salt water, and are planning starting another test on their acreage.

The Logsdon Valley oil field, near Munfordville, Hart County, is now producing about 1,000 bbls. a day and the Green River Pipe Line Co. is shipping about five tank cars a day to a refinery at Latonia, Ky. The price received by the operators is about 85 cents per barrel.

Field Notes

Total runs made from wells served by the Illinois Pipe Line Co. in western Kentucky during March were 115,181.55 bbls.

The articles of incorporation of the Sunnybrook Oil & Gas Co., of Burksville, Cumberland County, Kentucky, were approved by Secretary of State Magan. The company is capitalized at $100,000; incorporators are W. A. McGuire, Horse Cave; Arch McGuire, Louisville; Henry S. McGuire, Lexington. This company has large holdings in Cumberland County where it already has completed the drilling of a gas well with a volume of several million feet, and work is now in progress on a second well.

Arrangements are being completed in the Bonneville Pool, in the northwestern part of Hart County for the installation of a loading rack and oil storage for shipping the oil from the field to Louisville.

NEW IRAQ CONCESSION

NEW YORK, Apr. 18.—British Oil Development Co., Ltd., has arrived at an agreement with the Iraq government for concessions for oil exploration and development in that country, according to a statement in London by officials of the B.O.D. Co.

The terms for the concessions were decided upon at a recent conference in Bagdad between Lord Wester Wemyss and Sir Edward Mountain, Bart., officials of British Oil Development Co., and the prime minister of Iraq. The agreement, which covers development along the right bank of the River Tigris, is expected to be ratified shortly by the Iraq parliament.

ROYAL DUTCH-SOVIET DENIAL

Rumors in the German press that Royal Dutch had been negotiating with Soviet oil interests, but that the conference was broken off last week without result, have been formally denied by the board of Royal Dutch Co.

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 67)

Loring Oil Co.'s No. 18 Bowman-Hicks, 1,280 ft. S, 275 ft. E, NW cor. SW NW, Sec. 15-7-12 ..... Arranging to shoot stuck D.S. 4,850 ft.
Pelican Nat. Gas Co.'s No. 11 La. Long Leaf Lbr. Co., Sec. 10-7-11, 330 ft. N and W, SE cor. NE NW .... W.O.S.R. 2,592 ft.
Sabine Prod. Co.'s No. 3 Pearce, Sec. 10-7-11, 330 ft. S and E, NW cor. SE NW ..... Set 10-in. 110 ft; set 6-in. 2,275 ft.
Stovall Drlg. Co.'s No. 3 Nulton, 330 ft. N and W, SE cor. SE NE, Sec. 2-7-13 ..... Location abd.

UNION PARISH

Southern Carbon Co.'s No. 58 fee, Sec. 17-20-4e, 1,557 ft. W, 1,320 ft. S, NE cor. Sec. ..... Set 6-in. 2,120 ft.
Southern Carbon Co.'s 59 fee, 660 ft. N, SE SW cor. SE, Sec. 17-20-4e ..... Derrick.

ARKANSAS

UNION COUNTY—EL DORADO

Lion O. & R. Co.'s No. 9-A G. P. Hayes, 242 ft. S, 246 ft. W, NE cor. Lot 5, NE, Sec. 4-16-15 ..... S.D. 7,255 ft.
Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15 ..... Volcanic ash 3,193 ft.

UNION COUNTY—URBANA

Marine Oil Co.'s No. 1 Winn est., 330 ft. S and E, NE cor. S½ NW, Sec. 11-18-13 ..... T.A. 3,586 ft.
Marine Oil Co.'s No. 2-E Thompson, 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 10-18-13 ..... Location.
Wilson & Chapman's No. 1-B Hadley, Sec. 3-18-13, 330 ft. S and W, NE cor. SE NW ..... T.A. 3,545 ft.
Wilson & Chapman's No. 2 Emily King, Sec. 3-18-13, 150 ft. S, 150 ft. E, NW cor. NE NE ..... Rigging up.

EAST TEXAS

PANOLA COUNTY

Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur. .... T.A. 2,194 ft.
Nat. Gas Prod. Co.'s No. 1 Cadenhead, 5,319 ft. N, 5,620 ft. E, SW cor. B. C. Jordan Sur. ..... Set 12½-in. 40 ft.
United Prod. Corp.'s No. 17 Steele, 1,320 ft. N, 660 ft. W, SE cor. C. D. Steele lse., in B. C. Jordan Sur. .. Location.

MISSISSIPPI

HINDS COUNTY

James Alexander, tr.'s No. 1 Pullen, Sec. 26-6n-1e, C NW NE ..... Set 6⅝-in. 2,479 ft.
Belhaven College's No. 1 fee, Sec. 35-6n-1e, 360 ft. E. 210 ft. S, NW cor. SE NW ..... Comp. 45,172,000 ft. gas 2,394 ft.
McGuire et al's No. 1 Spring Lake, Sec. 11-5n-1e, 250 ft. N, 450 ft. W, from center of Sec. ..... S.D. 1,075 ft.

RANKIN COUNTY

Meredith & Smith's No. 2 Strawder, Sec. 12-5n-1e, 2,582 ft. W, 300 ft. N, SE cor. NE ..... Set 10-in. 61 ft; S.D. 420 ft.
Muse & Muse's No. 1 Pate, Sec. 12-5n-1e, 220 ft. N, 1,150 ft. W SE cor. ..... Set 6⅝-in. 2,420 ft.

WILDCAT OPERATIONS IN MISSISSIPPI

HINDS COUNTY

Company, farm and location— Remarks:

Atkins et al's No. 1 Crane Lawrence, Sec. 23-6n-1e, 300 ft. E, 132 ft. N, SW cor. NE SE ..... Derrick blown down.
Miss.-Minn. Oil Co.'s No. 1 Edwards Land Co., Sec. 23-6n-4w, 1,200 ft. N and E from center of Sec. ..... Drlg. 2,252 ft.

JASPER COUNTY

Bay Springs Pet. Co.'s No. 1 Keyes, C NW NE, Sec. 2-12-9 ..... T.A. 3,408 ft.

LOWNDES COUNTY

Lowndes County Oil & Dev. Co.'s No. 1 Carr est., Sec. 34-17-16e, 1,320 ft. E, 330 ft. S, NW cor. Sec. ..... Rigging up.

NEWTON COUNTY

Bob Dalton's No. 1 Majure, 400 ft. N, 300 ft. E, SW cor. SE, Sec. 25-6n-11e ..... S.D. 840 ft.

NOXUBEE COUNTY

Thompson & Donohue's No. 1 Donohue, Sec. 25-16n-17e .. S.D. 1,735 ft.

RANKIN COUNTY

Majestic O. & G. Co.'s No. 1 Elton Lbr. Co., Sec. 10-4n-3e. Derrick.
Orr et al's No. 1 Hanna, Sec. 14-5n-1e, 500 ft. E, 250 ft. S, NW cor. SW ..... Drlg. 2,262 ft.

SCOTT COUNTY

M. U. Culley et al's No. 1 Owens, Sec. 2-8-9 ..... Spudded in 16 ft.; S.D.

SHARKEY COUNTY

United Gas Public Service Co.'s No. 1 Lenhart, Sec. 14-14n-6w, 660 ft. N of C of S line of Sec. ..... Drlg. 2,872 ft.

WARREN COUNTY

Eagle Bend O. & G. Co.'s No. 1 Kiger, SW cor. SW SE, Sec. 9-18-3 ..... S.D. 2,607 ft.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 67)

DE SOTO PARISH

E. T. Oakes' No. 1 R. H. Bryant et al, 200 ft. N and W, SE cor. NE NW, Sec. 30-13-15 ..... S.D. 3,370 ft.
A. R. Smith's No. 1 Horn, Sec. 16-12-16, NE cor. Sec. .... Rigged up and S.D.
DeSoto Development Co.'s No. 1 Nickey, Sec. 7-13-12 ..... Derrick.
Walters-Nicholson. tr.'s No. 1 Jim Guy, Sec. 3-11-13 .. Set 8-in. 1,582 ft; T.D. 1,675 ft.
Warren & Craig's No. 1 Phillips, 450 ft. N, 250 ft. E, SW cor., NE, Sec. 33-13-14 ..... Set 10-in. 102 ft.

GRANT PARISH

Security Pet. Corp.'s No. 1 Swope est., Sec. 16-9-1e, 1,698 ft. N, 220 ft. E, SW cor. Sec. ..... Drlg. 50 ft.

MOREHOUSE PARISH

United Gas Public Service Co.'s No. 2 Sandidge, Sec. 11-20n-4e, 656 ft. S, 1,332 ft. W, NE cor. NW ..... S.D. 2,132 ft.

NATCHITOCHES PARISH

W. M. Coates' No. 1 Ross Olive, Sec. 10-9-10, 660 ft. S and E from cen. of Sec. ..... Moving in rig.
Dr. H. S. Gerson's No. 1 Smith, Sec. 11-10-8, 2,000 ft. N, NE cor. of irregular Sec. 10, in Sec. 11 ..... Drill stem stuck 1,000 ft.
R. A. Keaton's No. 1 Stephens, Sec. 25-10-6, 320 ft. N and W, SE cor. NW NW ..... S.D. 178 ft.
H. W. Perritt's No. 1 Cook, 165 ft. E, 105 ft. N, SW cor. NE SW, Sec. 3-8-9 ..... Rigging up.

OUACHITA PARISH

Wilson & Mitchell's No. 1 Williams, Sec. 5-16-1,e 330 ft. E, 240 ft. S, NW cor. SW SE ..... Coring chalk rock 2,750 ft.

RED RIVER PARISH

C. F. Davis' No. 1 Pierson, 500 ft. S, 317 ft. E, NW cor. SW NW, Sec. 12-14-11 ..... Location.
La. Oil Dev. Co.'s No. 2 La. Delta Pecan Co., 2,950 ft. S, 300 ft. E, NW cor., Sec. 27-13-11 ..... Spudded and S.D. 50 ft.

RICHLAND PARISH

National Gas Co.'s No. 1 Singletary, 1,980 ft. N, 660 ft. W, SE cor., Sec. 20-18n-7e ..... S.D. 2,515 ft.

SABINE PARISH

Baird & Hunter's No. 1 Petty, Sec. 11-7-11 ..... Tested dry 2,672 ft; W.O.
Beene et al's No. 1 Ezernack, Sec. 2-7-13, 1,070 ft. S, 250 ft. W, NE cor. ..... Set 6-in. 2,045 ft; T.D. 2,055 ft.
R. W. Boulding's No. 1 Williams, Sec. 17-7-10, 200 ft. S and E, NW cor. SW NE ..... Derrick.
Broderick & Calvert's No. 1 Costello, Sec. 2-7-14, 375 ft. S, 150 ft. W, NE cor. SE NW ..... T.D. 150 ft.
Coates Pet. Co.'s No. 1-B S. S. Martinez, Sec. 3-7-13, 330 ft. S and W, NE cor. SE NE ..... Set 6-in. 2,097 ft.
W. M. Coates' No. 1 Stille, 330 ft. N, 660 ft. W, SE cor., Sec. 35-8-13 ..... Derrick.
Craig et al's No. 1 Travis, Sec. 13-7-11, 200 ft. S and E, NW cor. SE NW ..... Rigging up.
B. A. Ferrell's No. 1 Haley, Sec. 6-7-12, 300 ft. S and E, NW cor. NW SW ..... Drlg. 550 ft.
R. L. Gay, tr.'s No. 1-A Long Bell Lbr. Co., 430 ft. S, 200 ft. W, NE cor. NW NW, Sec. 10-8-13 ..... Coring 4,780 ft.
J. I. Hall's No. 1 Williams, SE NW, Sec. 3-7-10 ..... Drlg. 1,870 ft.
Root Ref. Co.'s No. 1 Peterson, 330 ft. N and E of C, Sec. 24-7-13 ..... Dry and abd. 2,850 ft.
Geo. LeGrand's No. 1 McGough, Sec. 3-8-10 ..... Rigging up.
J. J. Keen, tr.'s No. 1 Belton (no check), Sec. 31-9-13 .... Set 6-in. 3,100 ft; T.D. 3,128 ft.
A. D. King, tr.'s No. 1 Germain, Sec. 7-7-10, 330 ft. E, 518 ft. N, SW cor. NE NE ..... Set 10-in. 104 ft.
W. F. Lacey's No. 2 McNeely, Sec. 14-7-11, 300 ft. S and E, NW cor. NE NE ..... Derrick.
Jack Lanier's No. 1 Petty, Sec. 11-7-11, 330 ft. N and W SE cor. NE SE ..... Rigging up.
Mays et al's No. 1 Delong, Sec. 5-7-10, 275 ft. N, 175 ft. W, SE cor. SE SW ..... Derrick pattern.
E. F. Neely's No. 1 Cobb & Alford, Sec. 14-7-11, 200 ft. S, 100 ft. E, NW cor. NE SW ..... W.O.S.R. 2,485 ft.
E. F. Neely's No. 2 Clanan, Sec. 14-7-11, 500 ft. N, 100 ft. W, SE cor. SE NW ..... Arranging to set tubing 2,513 ft.
C. E. Neff, tr.'s No. 1 Snell, Sec. 9-7-11, 350 ft. N, 660 ft. W, SE cor. Sec. ..... Rigging up.
Palmer & Smitherman's No. 1 La. Long Leaf Lbr. Co., Sec. 12-7-11, 330 ft. S and E, NW cor. NE SE ..... Location.
Palmer & Smitherman's No. 2 La. Long Leaf Lbr. Co., 330 ft. S and W, NE cor. NE SE, Sec. 12-7-11 ..... Location.
Palmer & Smitherman's No. 3 La. Long Leaf Lbr. Co., 330 ft. S and W, NE cor. NE SW, Sec. 12-7-11 .... Location.
J. F. Palmer's No. 1 Davis, Sec. 17-7-10, 200 ft. S and E, NW cor. NE NW ..... Derrick.
H. W. Perritt's No. 1 Brown Lbr. Co., Sec. 6-7-10, 330 ft. N and E, SW cor. SW SE ..... Tested dry 2,763 ft; W.O.
Roy Raines et al's No. 1 Beard, 720 ft. E, 700 ft. N, SW cor. SW SE, Sec. 8-8-10 ..... Derrick pattern.
Rowe et al's No. 1 Williams, Sec. 13-7-11, 600 ft. S, 40 ft. E, NW cor. SW ..... Tested dry 2,644 ft; W.O.
Ruston Drlg. Co.'s No. 1 Cutrer, 300 ft. S and E, NW cor. NW NE, Sec. 13-7-11 ..... Derrick pattern.
Scully & Beach's No. 1 Lafitte, Sec. 13-7-11, 100 ft. S, 660 ft. E, NW cor. NW ..... Set 10-in. 100 ft; drlg. 1,100 ft.
H. R. Smith et al's No. 1 La. Long Leaf Lbr. Co., Sec. 12-7-11, 330 ft. S and W, NE cor. NW SW ..... Location.
H. R. Smith et al's No. 2 La. Long Leaf Lbr. Co., 330 ft. N and W, SE cor. NW SW, Sec. 12-7-11 ..... W.O.S.R. 2,536 ft.
J. E. Smitherman's No. 1 Smith, Sec. 7-7-10, 330 ft. S and E, NW cor. NW SW ..... S.D.; W.O. 3,014 ft.
Southland Drlg. Co.'s No. 2 F. Martinez, Sec. 11-7-13, 330 ft. S and E, NW cor. NE NW ..... Derrick pattern.
Southland Drlg. Co.'s No. 1 Gilbert Martinez, Sec. 2-7-13, 330 ft. N and W, Sec. cor. SW SW ..... Derrick pattern.
State Prod. Co., Inc.'s No. 1 Davis, Sec. 17-7-10, 150 ft. N and E, SW cor. SW NW ..... Derrick.
A. F. Tarver's No. 3 Cutrer, Sec. 12-7-11, 1,120 ft. E, 300 ft. N, SW cor. NW ..... Testing 2,600 ft.
The Texas Co.'s No. 2-B Grauque, Sec. 10-7-13, 1,700 ft. W, 330 ft. S, NE cor. Sec. ..... Derrick.
Williams & Spiers' No. 1 Williams, Sec. 31-8-10, SE cor. SE SW ..... Derrick.

TENSAS PARISH

A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-13 ..... S.D. 3,545 ft.

WEBSTER PARISH

J. K. Wadley's No. 1 Matthews, Sec. 11-23-9, 130 ft. N, 330 ft. E, SW cor. SW NE ..... Drlg. 2,200 ft.

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ARKANSAS

ASHLEY COUNTY

D. S. Brooks, Inc.'s No. 1 Crossett Lbr. Co., 300 ft. N and E, SW cor. SW SE, Sec. 31-15s-6w ..... Rigging up.

COLUMBIA COUNTY

Kendall Oil Co.'s No. 1 Fullenweider, Rhea & Kitchen, Sec. 13-17-22 ..... S.D. 814 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W, C, NW SE, Sec. 4-20-3 ..... S.D. 1,350 ft.

CLEVELAND COUNTY

Crum & Stillwell's No. 1 E. R. Bell, Sec. 10-10s-12 ..... Rigged up and S.D.

CLEBURNE COUNTY

(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 33-11-9 ..... S.D. 3,740 ft.

CRAWFORD COUNTY

Ozark Natural Gas Co.'s No. 1 C. E. Jones, 660 ft. N, 372 ft. E, SW cor. SE SW, Sec. 32-9-31 ..... Location.

DALLAS COUNTY

J. H. James, tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. SE, Sec. 11-9-15 ..... D.S. stuck 2,575 ft.

Zepp O. & G. Co.'s No. 3 Hillman, Sec. 20-10-13, 150 ft. N, 450 ft. E, SW cor. NW NE ..... Location.

DREW COUNTY

Co-Operative Dev. Co.'s No. 1 Ogles, Sec. 35-15-5, 330 ft. S and E, NW cor. NE NW ..... S.D. 1,890 ft.

HOT SPRINGS COUNTY

Star Oil Co.'s No. 1 Cunningham, 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16 ..... Washing to bottom 1,300 ft.

LINCOLN COUNTY

Lawrence Cook, tr.'s No. 1 McGhee Planting Co., 420 ft. S, 200 ft. W, NE cor. NE SW, Sec. 5-8-7 ..... S.D. 2,800 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-19 ..... Location.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 15-6-26 ..... S.D; W.O. 3,570 ft.

MILLER COUNTY

C. E. Litchfield's No. 1 Hervey, 525 ft. S, 350 ft. W, NE cor. NE NW, Sec. 2-15-26 ..... Old well deepened, coring 2,700 ft.

Fitzwater et al's No. 1 Beck, Sec. 33-15-26 ..... Coring 2,600 ft.

W. E. Noel et al's No. 1 Dickson hrs., 1,980 ft. W, 660 ft. S, NE cor., Sec. 11-20-27 ..... Drlg. 2,150 ft.

OUACHITA COUNTY

Copenhaven et al's No. 2 Berg, C SE SE, Sec. 13-15-17 .. Fishing for D.S. 2,011 ft.

McLean et al's No. 1 L. D. Neely, Sec. 23-15-16, 200 ft. N and W, SE cor. NE SW ..... S.D. 102 ft.

PIKE COUNTY

E. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14 ..... T.A. 2,909 ft.

E. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 31-8-24 ..... S.D; W.O. 1,020 ft.

E. R. Henderson's No. 1 W. B. East, 300 ft. S, 150 ft. W, NE cor., Sec. 13-9-33 ..... Skidding over; to drill new hole.

PRAIRIE COUNTY

Powell Creek O. & G. Co.'s No. 1 Kloss, NE SW, Sec. 3-4n-6w ..... Partly rigged up and S.D.

SCOTT COUNTY

Heavener O. & G. Co.'s No. 1 Riser, Sec. 36-4-26 ..... S.D; T.D. 1,436 ft.

Waldron O. & G. Co.'s No. 1 White, NE cor. SW NW, Sec. 17-3n-29 ..... S.D. 1,860 ft.

SEVIER COUNTY

Tristate Oil Co.'s No. 1 Grimble, Sec. 34-8-32, S½ SW .. S.D. 950 ft.

ST. FRANCIS COUNTY

Field & Jones No. 1 F. M. White, Sec. 1-4n-2e, SW cor. NW ..... S.D. 700 ft.

UNION COUNTY

Drillers Oil & Dev. Co.'s No. 1 Pickering, 220 ft. N, 668 ft. E, SW cor. NW NE, Sec. 1-17-16 ..... T.A. 2,134 ft.

Drillers Oil & Dev. Co.'s No. 1 Haynie, Sec. 1-17-16, 200 ft. S, 300 ft. E, NW cor. NW SE ..... Salt water and abd. 2,145 ft.

H. H. Helms' No. 1 C. H. Murphy, NE cor. NW NE, Sec. 31-16-14 ..... S.D. 2,875 ft.

L. M. Hill et al's No. 1 J. W. Barnes, Sec. 21-19-16, NE cor. Sec. ..... Derrick.

Pigeon Hill Oil Co.'s No. 1 Union Sawmill Co., 330 ft. S and W, NE cor. NW SW, Sec. 19-17-12 ..... Rigging up.

Sunby et al's No. 2 Perdue, Sec. 33-16-14, 75 ft. S, 150 ft. E, NW cor. Sec. ..... Whipstocked 1,690 ft; S.D. 2,220 ft.

Wilson & Chapman's No. 1 King, Sec. 3-18-13, 330 ft. N and E, SW cor. NE NE ..... Derrick.

Wilson & Chapman's No. 1-A D. Norman, 330 ft. S and E, NW cor. N½ NE SE, Sec. 3-18-13 ..... Derrick.

Wilson & Chapman's No. 1 K. D. Parker, Sec. 3-18-13, 330 ft. N and E, SW cor. S½ NE SE ..... Comp. flowing 300 bbls. 3,581 ft.

WASHINGTON COUNTY

(Cable tools)

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... S.D. for funds 1,795 ft.

YELL COUNTY

(Cable tools)

Tegmeier & Luckett's No. 1 Falcon, Sec. 36-7-21 ..... S.D. 5,710 ft.

EAST TEXAS

BOWIE COUNTY

Logan & Elliott's No. 1 Smith, 9,600 ft. S, 2,500 ft. W, NE cor. Chas. Lewis Sur. ..... S.D. 4,505 ft.

Tarkington & Jones' No. 1 W. W. Whybark, 200 ft. S, 200 ft. W, SW cor. J. H. Dyer Sur. ..... S.D. 1,880 ft.

Lee Timberlake et al's No. 2 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur. ..... S.D. 3,000 ft.

CASS COUNTY

J. F. Morrisey's No. 1 T. J. Wilson, 1,088 ft. S of N line, 2,376 ft. E of W line of H.R.S., J. R. McFarland Sur. ..... S.D. 3,670 ft.

Davis & Pigg's No. 1 Roy Bryan, SW cor. Roy Bryan 88-ac. tr., Albert H. Lattimer Sur. ..... S.D. 2,860 ft.

Wm. S. King's No. 1 T. R. Richey, 1,450 ft. N, 1,600 ft. W, SE cor. Lavinia Morenew Sur. ..... Drlg. 2,345 ft.

C. E. Murdock's No. 1 First National Bank, Evans Watson Sur. ..... S.D. 4,890 ft.

John C. Rogers' No. 1 I. E. Lanier, 673 ft. N, 879 ft. W, SE cor. Lanier 86 ac. in K. E. Welborn Sur. .... S.D. 2,280 ft.

Olds & King's No. 2 Anthony, John C. Byers Sur. .... S.D. 1,760 ft.

John C. Rogers et al's No. 1 W. Q. Henderson, 2,100 ft. S, 2,100 ft. E, NW cor., Wm. Davis Sur. ..... S.D. 960 ft.

HARRISON COUNTY

Gochee et al's No. 1 Davidson, NW cor. R. W. Starr Sur.. Drlg. 900 ft.

Lloyd Oil Corp.'s No. 1 E. S. Timmons, 150 ft. from N line to 250 ft. from E line of 105-ac. tr., Findley Sur. ..... S.D. 4,195 ft.

Ryan Cons. Pet. Corp.'s No. 1 J. M. Fuhr, 1,300 ft. N of NW cor. T. J. Copelin Sur., 1,675 ft. SW at right angles to NW SE line of O'Neal Sur. ..... Derrick.

MARION COUNTY

Baunoch Dev. Co.'s No. 1 Miller, 725 ft. N, 1,470 ft. E, SW cor. H. Fulgram Sur. (was Gist, Claunch & Dodson) ..... S.D. 3,346 ft.

Geo. Hindeman et al's No. 1 F. V. Lindsey, 2,500 ft. S, most northerly N line, 2,555 ft. E most easterly W line, Alexander Albright Sur. ..... S.D. 2,330 ft.

PANOLA COUNTY

Hoffer et al's No. 1 Cameron Lbr. Co., center 1,306-ac. tr. in W. M. A. LaGrove Sur. ..... Derrick.

Moses & Wallace's No. 1 Daniel, 600 ft. N and W lines, Mrs. Gerrell 100-ac. tr., SW cor. Isabel Hanks Sur... Spudded and S.D.

G. A. Davidson's No. 1 Latham, Wm. Rich. Sur. ..... S.D. 2,394 ft.

J. L. Nelson et al's No. 1 J. W. Williams, 300 ft. S, 700 ft. W, NE cor. Williams' 67-ac. tr. in James Hanks Sur. ..... S.D. 3,055 ft.

United Prod. Co.'s No. 2 Werner, 1,350 ft. N, 542 ft. E, SW cor. 95-ac. tr., B. C. Jordan Sur. ..... Set 7-in. 2,784 ft; T.D. 2,912 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hosaler, E. Hughhart Sur. .... S.D. 2,795 ft.

Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. .... S.D. 2,280 ft.

SHELBY COUNTY

E. L. Chapman's No. 2 Pickering Lbr., Co. 600 ft. N, 400 ft. E, SW cor. D. S. Height Sur. ..... Derrick.

Chapperell Oil Co.'s No. 2 Holt, Matthew Moore Sur. ... S.D. 3,225 ft.

Fuller & O'Brien Bros.' No. 1 Frost-Johnson Lbr. Co., 200 ft. S, 150 ft. W, NE cor. 168-ac. tr., Aaron Castleberry Sur. ..... Drlg. 1,400 ft.

K. H. Francis' No. 1 John Mims, Mary Smith Sur. ..... S.D. 3,382 ft.

H. H. Gracey's No. 1 J. A. Morrison, 1,500 ft. N, 200 ft. E, SW cor. J. A. Morris' 109-ac. tr., William English Sur. ..... S.D. 2,600 ft.

Henry Maulding's No. 1 Frost Lbr. Co., NE cor. Frost Lbr. Co.'s 80-ac. tr., A. D. Fountain Sur. ..... S.D. 3,246 ft.

McRoby et al's No. 1 Windham, Wm. Leach Sur., on Windham 296-ac. tr. ..... S.D. 3,393 ft.

Ridgeway et al's No. 1 Polley, Domingues Gonzales Sur., 2,180 ft. E of SW cor., 160 ft. N at right angles of Polley 457-ac. tr. ..... S.D. 822 ft.

Sedberry et al's No. 1 Pickering Lbr. Co., 600 ft. N, 400 ft. E, SW cor. Jane Stoddard Sur. ..... Rigging up.

C. H. Tautenhahn's No. 1 J. C. Bogard, 300 ft. S, 900 ft. E, NW cor. J. C. Bogard's 52-ac. tr., Thomas Baker Sur. ..... S.D. 20 ft.

Western World's No. 1 Foster, Billingsby-Jeremiah Bowlin Sur. ..... S.D. 2,460 ft.

Wray & Dunbar's No. 1 C. A. Hayden, 600 ft. N and W SE cor. 152-ac. tr. in D. T. F. Yordt Sur. ..... Rigging up.

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 62)

Kostle-Moseley & Hatfield's No. 1 Furney, NE SE, Sec. 16-16-8 ..... Spud; S.D.

Hankerson et al's No. 1 Cessman, SW SE, Sec. 24-16-9.. S.D. 2,625 ft.

NORTON COUNTY

Richards et al's No. 1 Colby, Sec. 17-4-21w ..... Rig.

OSAGE COUNTY

Briggs & Smith's No. 1 Wood, SE NW, Sec. 21-14-15..... S.O. 2,190-2,200 ft.; S.D.

PHILLIPS COUNTY

Hall et al's No. 1 Donaldson, C NE NE, Sec. 25-5-18w... Drlg. 200 ft.

PRATT COUNTY

Ninnescah O. & G. Co.'s No. 1 Hardesty, SW SE SE, Sec. 28-27-11w ..... Rig.

RAWLINS COUNTY

J. G. Durham et al's No. 1 Weaver, SE cor., Sec. 3-2-35w.. S.D. 3,925 ft.

RENO COUNTY

Martin et al's No. 1 Yadu, C NW NW, Sec. 15-24-5w.... Rig.

Jarvis & Wright's No. 1 Rainbow, NW SE, Sec. 33-22-7w.. Drlg. 1,260 ft.

RICE COUNTY

J. Liggett et al's No. 1 Thodel, C NW NW, Sec. 11-21-7w. S.D. 50 ft.

Gypsy Oil Co.'s No. 1 Steckel, C NE NW, Sec. 31-19-10w. Sand 3,299-3,324 ft.; S.O.; S.D.

RUSSELL COUNTY

J. Brennan's No. 1 Waly, CNL E½ NW, Sec. 29-13-11w.. Rig.

RUSH COUNTY

Skelton et al's No. 1 Brock-Hartman, SW SE NE, Sec. 4-18-16w ..... S.D. 50 ft.

SALINE COUNTY

Twin Mounds Oil Co.'s No. 1 Weis, C W½ NE NW, Sec. 20-13-4w ..... T.D. 2,840 ft.; lowering csg. to drill deeper.

SHERIDAN COUNTY

Flo et al's No. 1 Shoemaker, SE SW, Sec. 27-7-26w.... Fishing 4,505 ft.

STEVENS COUNTY

Argus Prod.'s No. 2 Christopher, C NE, Sec. 10-33-39w... S.D. 5,521 ft.

SUMNER COUNTY

Trees Oil Co.'s No. 1 Tompkins, SW, Sec. 26-33-1..... Location.

Trees Oil Co. and Shell's No. 1 Springate, NE SE SW, Sec. 6-34-2 ..... T.D. 2,590 ft.; underreaming.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 68)

Jimmy Hicks' No. 1 Peters, SW cor. of most southerly part of Sur. 322 ..... Location.

Hynes and Nessly's No. 1 Duval Ranch Co., 200 ft. from S and E lines of Blk. 26, Sur. No. 196 ..... T.D. 450 ft.; drlg.

O. W. Killam's No. 1 Peters, 150 ft. from E line, 450 ft. from N line of SE of Sur. No. 1 ..... T.D. 2,725 ft.; standing.

Seacord and Putnam's No. 1 J. W. Johnson, 150 ft. to S and W lines of NW NW, Sur. 44 ..... T.D. 1,574 ft.; comp. 10,000,000 ft. gas.

Smith & Capps' No. 1 Duval ranch lands, 1,520 ft. from NE line, 2,490 ft. from SE line of Sur. 576 ..... T.D. 2,355 ft.; bailed, showing a little gas.

Smith & Capps' No. 2 Duval County Ranch Co., 2,040 ft. from NW line, 225 ft. from SW line of Sur. 574.. Derrick.

Suttle et al's No. 1 Bennett, 150 ft. from N and E lines of Sur. No. 44 ..... Drlg. water well.

The Texas Co.'s No. 1 Duval County Ranch Co., 2,860 ft. from E line, 150 ft. from N line of Sur. 96 ..... Rigging up.

R. A. Thompson's No. 1 Parr, 2,640 ft. to W line, 12,160 ft. to S line of San Andres grant ..... T.D. 4,300 ft.; drlg.

Trinity Drillers, Inc.'s No. 1 Hagist, 3,892 ft. from W line, 4,400 ft. from S line of Sur. 122 ..... Location.

FAYETTE COUNTY

A. D. Becker's No. 1 fee, 972 ft. from N line, 700 ft. from W line of tract in Williamson Sur. ..... Location.

GUADALUPE COUNTY

J. E. Clark's No. 1 R. Drummer, 600 ft. from SE line, 150 ft. from SW line of tract in Francisco Caravajal Sur. No. 47 ..... Location.

Luling Oil & Gas Co.'s No. 1 J. D. Brown, 160 ft. from N line, 450 ft. from E line of tract in C. Wall Sur.... T.D. 2,500 ft.; drlg.

Sal Mar Oil Corp.'s No. 1 F. A. Pfullman, 150 ft. from W line, 1,050 ft. from N line of tract in Lewis Bollinger Sur. ..... Moving in rig.

GOLIAD COUNTY

Hoffman & Gooch's No. 1 Fromme, 600 ft. from N and 1,200 ft. from W line of Peter B. Dexter Sur. ..... T.D. 2,590 ft.; drlg.

Humble Oil & Ref. Co.'s No. 1 Fromme, 450 ft. from S line, 150 ft. from W line of lease on Geo. Kersey Sur.. Derrick.

Plymouth Oil Co.'s No. 2 Parks, 400 ft. S of No. 1 Parks in Solomon Parks Sur. ..... Spudded in.

Neal et al's No. 1 J. M. Pettus, 10,700 ft. to S line, 2,500 ft. to E line of Pedro Trevino Sur. ..... T.D. 4,565 ft.; standing.

GONZALES COUNTY

Edmiston & Kirby Petroleum Co.'s No. 1 J. W. Ward, Jr., 200 ft. from N and W lines of tract in Dan McKay Sur. ..... Derrick up; moving in tools.

Johnson & Mattock's No. 1 J. James, 12 miles NE of Gonzales city, 900 varas from E line, 300 ft. from S line of tract in M. A. Williams Sur. ..... T.D. 545 ft.; standing.

Nassamer, Gordon & Waldrop's No. 1 B. Botts, 2,500 ft. from E line, 650 ft. from S line in Sec. 6, Blk. 56, Gonzales Sur. ..... T.D. 950 ft.; standing.

Crowder Oil Co.'s No. 1 Preston, 1,000 ft. from W line, 2,000 ft. from N line of W. W. Pace Sur. ..... T.D. 200 ft.; standing.

HIDALGO COUNTY

Barrett-Kanellos' No. 1 J. B. Brock, 7 miles W and N from Mission (on Monte Cristo road) ..... T.D. 4,010 ft.; S.D.
LaJoya Oil & Gas Co.'s No. 1 W. L. Hart, 6 miles W from Mission, north of San Fordyce ..... T.D. 4,500 ft.; abnd.
Dayle L. Smith's No. 1, 18 miles W from Edinburg ..... T.D. 4,026 ft.; abnd.
San Roman Oil Co.'s No. 1 J. T. Lomax, 7,500 ft. from S and E lines of San Roman Sur. ..... T.D. 2,500 ft.; S.D.
Dayle L. Smith's No. 3 Daskam, SW part of county ..... T.D. 1,446 ft.; drlg.

JIM HOGG COUNTY

L. W. Connor's No. 1 Holbien, 150 ft. from N and E lines of Blk. 7, Sur. 7, Holbien Subd. of Las Animas grant ..... T.D. 2,506 ft.; coring.
D. C. DeWitt's No. 1 Gomez, 1,170 ft. from N line, 150 ft. from W line of Sur. No. 12, SW part of county .. T.D. 800 ft.; drlg.
Duval Oil Co.'s No. 1 W. W. Jones, 1,020 ft. from S and W lines of 160-ac. tract in Holden Subd. of Share 5-A in San Diego Hinajosa grant ..... Location.
T. P. Morgan's No. 1 fee, 2,223 ft. to N line, 1,640 ft. to E line of Share 19, Palo Blanco grant ..... T.D. 4,207 ft.; standing.

JIM WELLS COUNTY

F. A. Lain's No. 1 Vernon Porter, 800 ft. from S line, 400 ft. from W line of 200-ac. tract in Sur. 25 ..... Spudded in.
Vacuum Oil Co.'s No. 1 Seeligson, 4,500 ft. to W line, 75,000 ft. to S line of Los Jaboncillos Sur. ..... T.D. 5,290 ft.; drlg.

KARNES COUNTY

A. E. Edmiston's No. 1 O. L. Cochran, 150 ft. from S line, 500 ft. from E line of farm in D. B. McConnell Sur. ..... T.D. 1,820 ft.; standing.
Pickett et al's No. 1 D. E. Lyons in Victor Blanco Sur. ..... Rigging up.

KENDALL COUNTY

Dixon Oil Co.'s No. 1 Ottmar Behr, 823 ft. from S and N lines of Jessie Wilson Sur., 3 miles S of Sisterdale ..... T.D. 2,708 ft; standing.
Fred S. Dibble's No. 1 Ellenbrach, Sur. 77, N part of county ..... T.D. 50 ft; S.D.

KERR COUNTY

Geo. Ball's No. 1 F. A. Karger, 3 miles N of Kerville .. Rig on ground.
Evans & Gant's No. 1 E. Young, A. E. Burg Sur. 28 .... T.D. 1,312 ft.; standing.
Verde O. & G. Co.'s No. 1 J. D. Witt, 1,320 ft. from N line, 1,220 ft. from W line of Sec. 1,923, Hamilton Sur., 4 miles from Center Point; T.D. 200 ft; carried to this depth and abandoned as Herber Oil Co.'s No. 1 J. D. Witt ..... T.D. 110 ft.; standing.

KLEBERG COUNTY

H. Carter et al's No. 1 R. H. Simmons, in Sec. 7, King Sur. No. 3 ..... T.D. 3,191 ft.; drlg.

LIVE OAK COUNTY

Catlett & O'Neill's No. 1 H. D. Miller, 2,400 ft. from SW line, 6,125 ft. from NW line of Miller ranch in SE part of county ..... Location.
J. A. Harper's No. 1 fee, 2,130 ft. to N line, 510 ft. to E line of farm, J. Pointevant Sur. 37 ..... Spudded in and standing.
Henderson Coquat's No. 1 Hewitt, 250 ft. from N and E lines of SW of Sec. 5, Thomas Adams Sur. ..... T.D. 1,785 ft.; S.D.
Henderson Coquat's No. 2 Sanger, 1,280 ft. NW of No. 1 Sanger ..... T.D. 3,523 ft.; abnd.

LEE COUNTY

Washington-Lee Oil Co.'s No. 1 Hicket, 1,100 ft. from N line, 200 ft. from E line of tract in J. D. Varreiman Sur. ..... Location.

McMULLEN COUNTY

Jacob Buzzini & Pickett's No. 2 Jacob, 150 ft. NW of No. 1 Jacob ..... T.D. 962 ft.; recementing csg.

MEDINA COUNTY

Frank A. Brown's No. 1 Fohn, 150 ft. from E line, 790 ft. from N line of J. F. Torry Sur. 113 ..... T.D. 922 ft.; abnd.
Robertson Drilling Co.'s No. 1 Little, 2,350 ft. from N line, 1,500 ft. from E line of E. B. Rutledge Sur., southern part of county ..... Spudded in.

MILAM COUNTY

Birdwell et al's No. 1 E. and J. S. Williams, 150 ft. from N and E lines of 46-ac. tr. in Samuel P. Carson Sur., 5 miles SW of Rockdale ..... Spudded in.
H. W. Elliott's No. 1 Marek, 767 ft. from N line, 500 ft. from W line of 160-ac. tr. in B. Wickson Sur. ..... T.D. 3,000 ft.; S.D.
Frank A. Yeager's No. 1 Hose, 750 ft. from E line, 150 ft. from S line of lease in E. Allen Sur. ..... T.D. 1,675 ft.; comp. 8 bbls.

NUECES COUNTY

Camp and Stanolind O. & G. Co.'s No. 1 King, 600 ft. to N and W lines of Sec. 23, Richard King farm lots subd. ..... T.D. 3,889 ft.; drilled plugs.
C. E. McCarthy's No. 1, W of Corpus Christi ..... Making location.

REAL COUNTY

McGinley Corp.'s No. 1 Haby, C of SW, Sec. 175 ..... T.D. 2,530 ft.; standing.

SAN PATRICIO COUNTY

John F. Camp's No. 1 Jackson, SW cor. SW, Sec. 30, 3 miles from Edroy ..... T.D. 4,850 ft.; drlg.

STARR COUNTY

Davenport et al's No. 1 Wells, 30 miles W of Mission .. T.D. 1,093 ft.; csg. stuck.
R. E. Johnson's No. 1 Goodrich, 1,214 ft. from N line, 1,065 ft. from W line of tr., 1½ miles N of Rio Grande City ..... T.D. 1,382 ft.; comp.; flowed 200 bbls. in 24 hrs.
Stryalls Oil Corp.'s No. 1 M. E. Salinas, 155 ft. from N and W lines of lease in Porcion 80, Share 38 .... T.D. 1,540 ft.; standing.
Strayhorn Oil Co.'s No. 1 Caffarelli, Porcion 80 ..... Location.
R. B. Suttle's No. 1 Guerra, 2,000 ft. to N line, 270 ft. to W line of Porcion 110 ..... T.D. 810 ft.; no report.
Jack Tarver's No. 1 Guerra, NE of Rio Grande City .... T.D. 856 ft.; changing to rotary.
Jess Williams' No. 1 Welch, 1,120 ft. to W line, 1,500 ft. to N line of tr. in Pedernal grant ..... T.D. 840 ft.; drlg.

TRAVIS COUNTY

C. R. Franklin et al's No. 1 J. Wilson, 160 ft. from N and W lines of farm in A. Alexander Sur. ..... T.D. 1,210 ft.; S.D.
Fritz Fuchs' No. 1 Swedish, 2,350 ft. from NE line, 750 ft. from NW line of Thomas Smith Sur. ..... Location.
Ray & Henze's No. 1 Hatech, in C of tr. in S. Hamilton Sur. ..... T.D. 900 ft.; S.D.
Ray & Orth's No. 1 Lundgren, 550 ft. from N line, 150 ft. from W line of 133-ac. tr. in L. Kimbro Sur. .... Location.

WEBB COUNTY

O. W. Killams' No. 5 Bruni, in J. V. Borrego grant .... T.D. 1,872 ft.; abnd.
Norden & Morris' No. 1 Gates, 160 ft. from E line, 50 ft. from S line of Blk. 5, Sur. 19 ..... T.D. 1,655 ft.; drlg.
Power & Dettenhalm's No. 1 Cowan & Goss, 1,870 ft. from W line, 1,656 ft. from N line of Sur. 1,606 .... T.D. 405 ft.; standing.
Phillips Rosenberg's No. 2 Laurel, 150 ft. from N and W lines of Blk. 8, Sur. 271 ..... Rigged up.

WILLIAMSON COUNTY

McLean et al's No. 2 R. C. Miller, 800 ft. to S line, 100 ft. to W line of tr. in B. Manlove Sur. ..... Rigging up.
McNeil et al's No. 1 W. R. Lane, 450 ft. from NW line, 150 ft. from SW line of 108.4-ac. tr. in T. E. Shell Sur. ..... T.D. 1,700 ft.; abnd.
G. B. Peterman's No. 1 Galler, 1,800 ft. from S line, 150 ft. from W line of 140-ac. tr. in H.Y.&B.R.R. Sur. ..... T.D. 1,493 ft.; set csg.

ZAPATA COUNTY

Ballard & Mercer's No. 1 Flores, 500 ft. from NE line, 580 ft. from SE line of Blk. 27, Porcion 37 ..... T.D. 2,497 ft.; trying to get drill stem test.
George Ball's No. 1 Gutierrez, in Charco Redondo grant, taken over from Moore et al to deepen ..... T.D. 2,065 ft.; drlg.
Joe Cullinan's No. 1 E. Gutierrez, 1,992 ft. from NE line, 2,303 ft. from SE line of Charco de la India grant ..... T.D. 40 ft.; set surface csg.
O. W. Killam's No. 1 Barrocito Ranch in J. V. Borrego Sur. ..... Spudded in.
Major Co.'s No. 1 Benavides, 150 ft. from NW and SW lines of Sur. 12, NE part of county ..... T.D. 1,504 ft.; testing.

ZAVALLA COUNTY

Carpenter & Jenkins et al's No. 1 John Wolf, Sec. 8, Abstract 1,199 ..... T.D. 757 ft.; resumed drlg.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 64)

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 26 Cade, N. Fitzsimmons Sur., 600 ft. S of No. 24 ..... Hard sand and shale 5,235 ft.
Yount Lee Oil Co.'s No. 27 Cade, N. Fitzsimmons Sur., 600 ft. N of No. 21 in line with Nos. 22 and 23 ..... Drlg. sand and lime 4,765 ft.
Yount Lee Oil Co.'s No. 1 Broussard & Orme, 200 ft. E of N cor. of N. Fitzsimmons Sur., in Martin Dunman Sur. ..... Sand showing oil 5,298 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 133-A "B" ..... Set 1 joint 10-in. screen 551 ft.; comp. pumping 2 bbls. net oil.
Rio Bravo Oil Co.'s No. 134-A "C" ..... Sand showing oil 534-36 ft.

HUMBLE—HARRIS COUNTY

J. E. Burt et al's No. 1 C.O.&G.-The Texas Company fee, J. B. Stevenson Sur. ..... T.D. 2,282 ft.; abnd.
J. E. Burt et al's No. 2 C.O.&G.-The Texas Co. fee, J. B. Stevenson Sur., 450 ft. N of No. 1 ..... Location.
Sun Oil Co.'s No. 27 Bender, W. B. Adams Sur., 250 ft. W of No. 26 in line with No. 25 ..... Heaving shale 4,697 ft.; abnd.
Sun Oil Co.'s No. 51 River, Robert Dunman Sur., 130 ft. S of No. 50 ..... Swabbing 1,406 ft.
The Texas Company's No. 24 W.&P. fee, J. B. Stevenson Sur., 50 ft. from W line and 50 ft. from S line .... Drlg. clay 124 ft.

PIERCE JUNCTION—HARRIS COUNTY

Anderson & Plummer's No. 7 Whitehead, Jas. Hamilton Sur. No. 51, 248 ft. S of No. 4 and 304 ft. from E line ..... Spudded.
Navarro Oil Co.'s No. 3-A Cain (W.O.), Jas. Hamilton Sur. No. 98; 75 ft. from S line and 50 ft. from W line of "A" lease ..... No report.
Pure Oil Co.-Moody Receiver's No. 3 Herman, Jas. Kopman Sur., 200 ft. due W of C of E line of 25-acre tract ..... Drlg. sticky shale 3,967 ft.
Rio Bravo Oil Co.'s No. 7-A Settegast (D.D.), Jos. Kopman Sur. No. 44, 1,400 ft. NW along NE line from SE cor. "A" lease and 100 ft. SW at right angles... Cutting and pulling liner 4,300 ft.
Rio Bravo Oil Co.'s No. 24-A Settegast, J. Kopman Sur. No. 44, 1,900 ft. S and 200 ft. W of NE cor. of "A" lease ..... Drlg. sand 3,927 ft.

MOSS BLUFF—LIBERTY COUNTY

Humble Oil & Ref. Co.'s No. 10 Sterling, Jas. McFaddin Sur., 450 ft. S of No. 9 ..... Spudded.

MYKAWA—HARRIS COUNTY

F. R. Flannigan et al's No. 2 Minnetex, 125 ft. from W line and 100 ft. from S line, Lot 251, Wm. J. Lovett Sur. ..... Rig.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Co.'s No. 20 Esperson, C. W. Fisher Sur., 471 ft. from W line and 510 ft. N of No. 5 Esperson ..... Coring sand showing oil 3,626 ft.
Cranfill-Reynolds Co.'s No. 9 Moore's Bluff, M. Duncan Sur., 500 ft. S of N line of Moore's Bluff tract in line with No. 6 Davis and No. 6 Moore's Bluff ..... Location.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 15 Boyt, H.&T.C. Sur. No. 22, 500 ft. E and 500 ft. S of No. 12 ..... Set screen 3,729 ft.

HULL—LIBERTY COUNTY

Bashara Oil Co.'s No. 1 Hannah, Jesse DeVore Sur., 100 ft. W of The Texas Co.'s No. 1 Hannah ..... Derrick.
D. & L. Prod. Co. and Bashara Oil Co.'s No. 1 Pevito, Jesse Devore Sur., 34½ ft. from E line and 30 ft. from N line of 5-acre strip ..... Derrick.
Eclipse Oil Co.'s No. 1 Barrow (D.D.), Jesse DeVore Sur., 50 ft. from N line and 31 ft. from E line of 3.7-ac. tract ..... Drlg. sand and shale 4,600 ft.
Republic Prod. Co.'s No. 63-A Dolbear, Jesse Devore Sur., 50 ft. NW of No. 63 in line with No. 61 ..... Drlg. sand and shale 1,700 ft.

MARKHAM—MATAGORDA COUNTY

Claude Hamill et al's No. 1 Northern Irrigation Co., 50 ft. out of SW cor. of N 80 acres (half) of NW Sec. 5, Blk. 9, I.&G.N. Sur. ..... T.D. 3,504 ft.; sidetracked at 1,640 ft.; drlg. shale 2,163 ft.
Smith et al's No. 2 Hudson (D.D.), 850 ft. from E line and 1,050 ft. from S line of Blk. 15, Henry Parker Sur. ..... T.D. 3,261 ft.; drlg. deeper.
The Texas Company's No. 1 Texas Pipe Line Co., Wm. Hadden Sur., Blk. 5, 50 ft. S and 50 ft. W of NE cor. of tract ..... Rigging up.
United North & South Oil Co.'s No. 1 McDonald, I.&G.N. Sur., Blk. 9, Sec. 5, 460 ft. S and 80 ft. E of NW cor. 35-acre tract ..... T.D. 3,698 ft.; plugged to sand at 3,577-81 ft.; swabbing 10 bbls. daily.

PORT NECHES—ORANGE COUNTY

The Texas Company's No. 1 Polk-Kuhn-Glass, 260 ft. E and 1,545 ft. S of SW cor. Marshall Beaucham Sur., in the T. J. Notgrass Sur. ..... Water sand 6,698 ft.
The Texas Co.'s No. 2 Kuhn (D.D.), 589 ft. W and 150 ft. S of NE cor. Mary E. Hall Sur. No. 2 ..... Rig up to work over 4,412 ft.
The Texas Company's No. 3 Kuhn, 587 ft. S and 150 ft. W of NE cor. of the Mary E. Hall Sur. No. 2 ... Sand and shale showing oil 4,075-91 ft.; running 7-in. (O.D.) csg.

ORANGE—ORANGE COUNTY

Sun Oil Co.'s No. 1 Belile (D.D.) ..... Cleaning hole to deepen 3,655 ft.

REFUGIO—REFUGIO COUNTY

E. M. Jones' No. 1-B Mitchell (D.D.), 250 ft. NW of SE line and 250 ft. SW of Mission River ..... Drlg. shale 8,340 ft.
Larco Gas Co.'s No. 4 Strauch heirs, 150 ft. from N line and 150 ft. from W line, Lot 6, Blk. 2 ..... Cutting and pulling liner 3,698 ft.
Moody-Seagraves Prod. Co.'s No. 2 O'Connor (W.O.),150 ft. from N line and 508 ft. from W line 62-acre tract ..... T.D. 6,454 ft.; plugged to 6,390 ft.
Pearson Properties' No. 2 Ryals (W.O.), 600 ft. from S line and 150 ft. from W line of lease ..... Drlg. shale 5,820 ft.
United Prod. Corp.'s No. 5 Mitchell (W.O.), Refugio Townsite, 150 ft. from N line and 438 ft. from E line of tract ..... T.D. 6,446 ft.; plugged to 6,400 ft.; perforated 6,382-97 ft.
United Prod. Corp.'s No. 3 W. J. Fox (D.D.), Wm. Hews & L. Brown Sur., 2,099 ft. NE along SE line from SE cor. of lease, thence 1,690 ft. NW at right angles ..... No report.
United Prod. Corp.'s No. 4 W. J. Fox, 2,600 ft. NE along SE line from SE cor. of Wm. Hews and L. Brown Sur., thence 1,420 ft. NW at right angles ... No report.
United Prod. Corp.'s No. 5 W. J. Fox, 2,150 ft. NE along SE line from SE cor. of Wm. Hews and L. Brown Sur., and thence 890 ft. NW at right angles ..... No report.

SOUTH LOUISIANA FIELDS

JENNINGS—ACADIA PARISH

Russell Campbell's No. 3 Syndicate (D.D.), 475 ft. S and 350 ft. W of NE cor. Sec. 41-9s-2w ..... Standing 2,020 ft.

Heywood & Heywood's No. 2 Jennings fee simple, 50 ft. N of SE cor. and 15 ft. W of E line of Lot 9, Sec. 46-9s-2w ..... Drlg. 1,200 ft.
Kathleen Oil Co.'s No. 1 Syndicate fee (W.O.), Sec. 46-9s-2w ..... Twisted off 4,025 ft.; shut down.
Reliable Oil Co.'s No. 2 Rawson (D.D.) ..... No report.

IOWA—CALCASIEU AND JEFF DAVIS PARISHES

Shell Petroleum Corp.'s No. 2 Heyd, 225 ft. out of NE cor. of Sec. 13-9s-7w ..... Sand showing oil 6,968-79 ft.; running 7-in. csg.
Shell Petroleum Corp.'s No. 1 Fontenot, Sec. 7-9s-6w, 450 ft. due E No. 2 Heyd ..... Drlg. shale 6,210 ft.

EDGERLY—CALCASIEU PARISH

C. M. Crotty Oil Co.'s No. 7 Lillard (W.O.) ..... T.D. 2,530 ft.; pulling screen to deepen.
S. A. Emerson et al's No. 15 Hunter, Sec. 21-9s-11w, 265 ft. SE of No. 10 ..... Drlg. hard sand 3,280 ft.

LOCKPORT—CALCASIEU PARISH

Union Sulphur Co.'s No. 2 Martha Moss (W.O.), 120 ft. S and 56 ft. W of NE cor. SE NW of Sec. 8-10s-9w ... Drlg. sandy shale 7,064 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 732 fee (W.O.), 965 ft. N and 2,065 ft. W of C of Sec. 29-9s-10w ..... Salt 4,220-4,447 ft.
Union Sulphur Co.'s No. 769 fee, 295 ft. S, 918 ft. W of C of Sec. 29-9s-10w ..... Sand showing oil 4,440-47 ft.; cmtd. csg.

VINTON—CALCASIEU PARISH

Marrs McLean's No. 13 Gray, 464 ft. E and 460 ft. S of C of Sec. 30-10s-12w ..... Sand showing oil 1,604 ft.; cmtd. 8-in. csg. 1,579 ft.
Vinton Petroleum Co.'s No. 1 Matilda Gray (20 acres), 48 ft. N and 89 ft. W of SE cor. SW NE of Sec. 23-10s-12w (D.D.) ..... T.D. 3,214 ft.; sidetracked second time 2,875-2,978 ft.; set. 10 ft. screen; tested salt water.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 8 Dorion, 1,280 ft. S and 792 ft. E of NW cor. Sec. 24-12s-10w ..... Drlg. rock 2,620 ft.
Calcasieu Oil Co.'s No. 32 Watkins, 1,466 ft. E and 3,841 ft. N of SW cor. Lot 9, Secs. 37, 38 and 39, in Sec. 24-12s-10w ..... Drlg. shale and lime 1,850 ft.
J. G. Sutton's No. 6 Irwin, 1,320 ft. N and 1,845 ft. W of SE cor. of Sec. 13-12s-10w ..... Drlg. gumbo 1,640 ft.
Union Sulphur Co.'s No. 1 Gulf land (Pure Oil Co. lease), 1,420 ft. N, 400 ft. W of SE cor. Sec. 11-12s-10w ..... Drlg. sand and shale 5,610 ft.
Yount Lee Oil Co.'s No. 28 State, 850 ft. E, 600 ft. S of NW cor. Sec. 24-12s-10w ..... Drlg. 396 ft.
Yount Lee Oil Co.'s No. 50 State, 600 ft. S, 700 ft. E of NW cor. of Sec. 24-12s-10w ..... Location.
Yount Lee Oil Co.'s No. 51 State, 545 ft. S, 560 ft. E of NW cor. of Sec. 24-12s-10w ..... Location.
Yount Lee Oil Co.'s No. 52 State, 495 ft. S, 420 ft. E of NW cor. of Sec. 24-12s-10w ..... Location.
Yount Lee Oil Co.'s No. 53 State, 445 ft. S, 275 ft. E of NW cor. of Sec. 24-12s-10w ..... Location.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 11 Yount Lee, Sec. 12-13s-8w, 800 ft. S 66 deg. 42 min. from No. 9 ..... Location.

PORT BARRE—ST. LANDRY PARISH

W. A. Aggers' No. 1 Cochran, 250 ft. S and 250 ft. E of NW cor. of Fractional Sec. 21-6s-5e ..... Standing 3,461 ft.
The Texas Company's No. 11 Botney Bay, N 82 deg. 10 min. W 474 ft. from NE cor. of tract and N 7 deg. 50 min. E 105 ft. in Sec. 4-6s-5e ..... Drlg. shale 3,010 ft.

MISCELLANEOUS WILDCATS

TEXAS

AUSTIN COUNTY

C. O. Farrington et al's No. 1 Jackson, Brookshire, S. F. Austin Sur. No. 10, 750 ft. NW of Empire Gas & Fuel Co.'s No. 1 Jackson and 250 ft. S of NW line ... Cmtd. 10-in. csg. 60 ft.; standing.
Grant & Baker's No. 1 Chesley, W. C. White Sur., 150 ft. from NW line and 150 ft. from SW line of 26-acre tract (northeast of Raccoon Bend Field) ..... Cmtd. 10-in. csg. 196 ft.; standing.
O'Hara Oil & Gas Co.'s No. 1 Neilius, J. C. Cummings Hacienda Sur., 650 ft. N of No. 1 Schroeder in 18-acre tract, north edge Mill Creek ..... Derrick.
Pomacal & Boletka's No. 1 Schebajsa, 329 ft. N, 78 deg. E of N cor. B. Dottery Sur., near center of SW line of S. F. Austin 4 League on west fork of Mill Creek .. Shut down 1,740 ft.
Vogelpohl et al's No. 1 Trenchman, J. Cummings Hacienda Sur., 319½ ft. from E line, 1,344 ft. from S line of 32¼-acre tract ..... Shut down 780 ft.

BRAZORIA COUNTY

John Deering's No. 1 C. W. Chapman, 294 ft. from S line and 104 ft. from E line of Lot 2, Andrew Robinson Sur. ..... Preparing to resume drlg. 1,514 ft.
The Texas Company's No. 2 Belcher, Manvel (D.D.), 1,728 ft. southeasterly and 1,231 ft. southwesterly at right angles out of N cor. of lease, Harvey Little Sur. ..... T.D. 5,736 ft.; plugged to 5,685 ft.; setting screen.
United Oil Syndicate's No. 2 Levitt, John Peske Sur., 75 ft. NW of No. 1 ..... Drlg. gumbo 1,495 ft.

BURLESON COUNTY

Marek & Son's No. 3 A. Marek, N. McFaddin Sur., 1,068 ft. N and 225 ft. W of SE cor. of tract ..... Standing 2,210 ft.
M. O. & T. Corp.'s No. 1 Rigers ..... Shut down 2,050 ft.
Sampson Oil & Gas Co.'s No. 1 Duckworth & Gilley, 100 ft. from S line and 100 ft. from W line of Blk. 8, P. Singleton Sur. ..... Location.
J. E. Stubblefield et al's No. 1 Mitchell, A. T. Woolridge Sur., 81 ft. SW and 4,340 ft. SE of S cor. of Joseph Henson Sur. ..... No report.

COLORADO COUNTY

Coyle-Concord Oil Co.'s No. 1 Nelson, I.&G.N. Sur., Sec. 42 ..... Rig.

FORT BEND COUNTY

O'Hara et al's No. 1 Brown, Pilant Lake, Wm. Barrett and Abner Harris Sur., 600 ft. out of SW cor. of Brown 600-acre tract ..... No report.
Naylor & DeCosta's No. 1 Naylor, 6,350 ft. N, 55 deg. E from SW cor. 653-acre tract in Christman Sur. ..... Cmtd. 12½-in. csg. 1,221 ft.; S.D.

GRIMES COUNTY

Barnett et al's No. 1 Dodd, Timothy Jones Sur., 280 ft. N. Cobb & Rasmussen's No. 1 Dodd ..... Rock 1,792 ft.
Rianjo Oil Co.'s No. 3 Cuthrell, Patrick B. O'Connor Sur., 150 ft. S, 10 deg. E of No. 2 ..... Shut down 1,150 ft.
Stanolind Oil & Gas Co.'s No. 1 Mary Sullivan, A. Yeaman's Sur., 998 ft. out of SE cor. of 712-acre tract ... Shut down 3,710 ft.

HARDIN COUNTY

Botay Oil Co.'s No. 1 Southwestern Lbr. Co., 150 varas W of C of E line of Mary K. Sherman Sur. ..... Location.

HARRIS COUNTY

Flanigan et al's No. 1 Woodburn, Genoa, August Whitlock Sur., 200 ft. out of NW cor. of tract ..... Location.
Shubert & Alexander's No. 1 Herman Hale, 1,053 varas E of NW cor. R. A. Hanks Sur., thence 790 varas S and thence 70 varas W 74 deg. ..... Drlg. sandy shale 3,708 ft.

JACKSON COUNTY

Chicago Gulf Corp.'s No. 4 Druschell (W.O.) ..... No report.
Chicago Gulf Corp.'s No. 10 Druschell, Hayes Sur., 1,300 ft. NW of No. 3 ..... No report.

JASPER COUNTY

Hext Drlg. Co.'s No. 1 Flourney, B. F. Jones Sur., 900 ft. NW of Helmerich & Payne's No. 1 Flourney ..... T.D. 4,005 ft.; shut down.

JEFFERSON COUNTY

John I. Pipkin and Elam's No. 1 Broussard, McGaffey Sur., 800 ft. from S line in center E and W of 205-acre tract ..... Drlg. hard sandy shale 2,618 ft.
Jack Shultz' No. 1 M. O. Todd, 200 varas S and 58 varas E of NW cor. of Wm. Carr Sur. ..... No report.
C. R. Tolliver et al's No. 1 Tolliver, Duches Sur., 3,500 ft. from W line and 1,500 ft. S of Pine Island Bayou .. Drill stem stuck 4,125 ft.; pulled derrick in.

LIBERTY COUNTY

Bain-Rheubotham's No. 1 J. M. Neal, Edward Tanner Sur., 1,850 ft. E of NW cor. Abshier tract and 300 ft. N of S line in 50-ac. tract ..... Derrick.
Devore Oil Co.'s No. 1 Finley, 10,500 ft. from E line and 3,000 ft. from S line of A. B. Hardin Sur. ..... Drlg. gumbo and lime 2,942 ft.
Hamm et al's No. 1 Harvard, Davis Hill ..... Gumbo 1,015 ft.; shut down.
J. T. May et al's No. 1 Dunman, J. C. Martin League .... Location.

MATAGORDA COUNTY

Dr. Griffith et al's No. 2 Baer, Big Hill, 5,000 ft. N, 3,000 ft. E from SW cor. of Seth Ingram Sur. ..... Drlg. gumbo 1,290 ft.
United North & South Oil Co.'s No. 1 Stoddard, J. C. Keller Sur., 150 ft. W and 545 ft. N of SE cor. Blk. 53, Buckeye Townsite ..... T.D. 7,828 ft.; sand showing oil; cmtd. 6⅝-in. csg 7,765 ft.

MONTGOMERY COUNTY

Gohlson Bros. and Rycade Oil Corp.'s No. 1 Drought, 35 ft. E and 150 ft. S of NW cor. of Konkrite Sur.... Location.
Heep Oil Corp.'s No. 1 Roberts, Wm. H. Harrison Sur., 450 ft. out of SE cor. of tract ..... Derrick.
Heep Oil Corp.'s No. 1 J. R. Freeman, John Davis Sur., 450 ft. from S line in center of 36.46-ac. tract ..... Derrick.
Pevehouse Oil Co.'s No. 1 Sealey, Jas. Pevehouse Sur., 1,575 ft. N of N line of Horton & Woodson's 1,562-acre tract and 2,226 ft. E of W line of H.&W. 1,870-acre tract ..... Shut down 3,984 ft.
Strake Oil Corp.'s No. 2 South Texas Development Co., Theo. Slade Sur., 2,220 ft. S 10 deg. E of No. 1 ..... Drlg. gumbo 884 ft.
Wilson Oil Co.'s No. 2 Leiberman (Kelley-Baker), 7,175 ft. from W line and 75 ft. from S line of D. James Sur. ..... T.D. 4,922 ft.; reported sand showing oil and gas; shut down.

NEWTON COUNTY

R. T. Briscoe et al's No. 1-A Joe Inman, 1,950 ft. E and 500 ft. N of SW cor. J. M. Scott Sur. ..... Shut down 1,795 ft.

ORANGE COUNTY

Altex Oil Co.'s (Veteran Oil Co.) No. 1 Reed, A. Nelson Sur. No. 1, 500 ft. from N line and 250 ft. from E line of tract ..... Drlg. shale 4,352 ft.
Crew Oil Co.'s No. 1-A Mansfield, 50 ft. E of No. 1 ..... Shut down 2,275 ft.

POLK COUNTY

Freeman et al's No. 2 Freeman ..... Shut down 3,162 ft.
T. B. Hoffer's No. 1 Saner-Ragly Lbr. Co., 300 ft. out of most northerly cor. of most easterly County School Land Abst. 271 ..... Shut down 1,517 ft.

REFUGIO COUNTY

Humble Oil & Ref. Co.'s No. 2 O'Connor, John Keating Sur., 12,625 ft. N of S line at right angles and 8,158 ft. W of E line at right angles ..... Drlg. hard sand 3,312 ft.

SAN JACINTO COUNTY

E. P. Edwards' No. 1 J. R. Bennett, Cold Springs ..... Shut down 750 ft.
Seven Wells Oil Co.'s No. 1 Foster Lumber Co., 3,000 varas from the E line and 2,000 varas from the S line of H. Alsbury Sur. ..... Location.

TRINITY COUNTY

John Deering's No. 1 J. B. Gibson ..... Shut down 2,017 ft.

VICTORIA COUNTY

Bunte et al's No. 2 Keeran, Martin DeLeon Sur., 200 ft. E of No. 1 ..... Drlg. shale 3,504 ft.
Houston Oil Co.'s No. 1-A McFaddin, 200 ft. from NE line, 240 ft. from SE line of I.R.R. Sur. No. 20 ..... Drlg. sticky shale 2,145 ft.
T. B. Slick Estate's No. 2 McFaddin, J. Varian Sur., 3,500 ft. NW of No. 1 and 1,100 ft. NE at right angles to SW line of lease ..... Sand 3,499-3,507 ft.; drill stem test 500 lbs. dry gas.
The Texas Company's No. 4 McFaddin, 86 deg. E, 1,728½ ft. from NE cor. of Andrew J. Gray Sur. in John M. Rine Sur. ..... Repairing rig after blowout 2,840 ft.

WALKER COUNTY

Hart Oil Co.'s No. 1 Thompson Lbr. Co., Jose Ortega Sur., 1,265 ft. S, 1,876 ft. W of SW cor. of J. B. Gibson's 71-acre tract ..... Shut down for repairs 2,090 ft.

WALLER COUNTY

McDaniel and associates' No. 1 Citizens State Bank, B.B.B.&C. Sur., C of 150-acre tract ..... No report.

SOUTH LOUISIANA

ASCENSION PARISH

McElroy Pet. Co.'s No. 2 Lacey, 150 ft. S, 150 ft. W of NE cor. of Sec. 29-10s-4e ..... Shut down 4,515 ft.

CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w ..... Shut down 875 ft.
Hill Oil Co.'s No. 1 W. S. Vincent et al, 642 ft. W, 75 ft. N from SE cor., Sec. 25-10s-10w ..... Abandoned 3,255 ft.
Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w ..... Shut down 3,650 ft.
Success Oil Co.'s No. 1 Hewitt, 90 ft. out of SW cor., Sec. 11-9s-11w ..... Rig standing.

CAMERON PARISH

Brownie-Babbette Oil Co.'s No. 1 R. A. Moore, 562 ft. W, 50 ft. S of NE cor. E half SE of Sec. 18-12s-12w.. Fishing drill pipe 3,900 ft.

EVANGELINE PARISH

Emile LeDeau's No. 1 Vidrine, 260 ft. W and 350 ft. S of NE cor. of Sec. 47-3s-2e ..... Shut down 1,420 ft.

IBERIA PARISH

Warrick Oil Co.'s No. 1 Bernard, 912 ft. N and 150 ft. E of SW cor. Sec. 54-12s-7e ..... Rig.

IBERVILLE PARISH

Standard Oil Co.'s No. 2 Myrtle Grove-Wilbert, Bayou Choctaw, 2,040 ft. N and 600 ft. W of C of Sec. 52-9s-11e ..... Drlg. hard sand 3,046 ft.
Standard Oil Co.'s No. 2 Gay, Bayou Choctaw, 4,500 ft. N and 600 ft. E of SW cor. SE of Sec. 52-9s-11e..... Drlg. 5,575 ft.
Standard Oil Co.'s No. 7 Schwing, Bayou Blue, 1,359 ft. N and 1,856 ft. E of C of Sec. 74-9s-10w ..... Drlg. gumbo 5,141 ft.

LA FOURCHE PARISH

State Prod. Co.'s No. "D" W. H. Stark, 1,935 ft. S and 1,550 ft. W of NE cor. Sec. 72-15s-15e ..... Sulphur test.

POINTE COUPEE PARISH

Grand Bay Oil & Gas Co.'s No. 1 Moniotte, 10,140 ft. S and 13,450 ft. E of NW cor. Twp. 5s-11 in Sec. 34.... Shut down 310 ft.

TERREBONNE PARISH

La. Gas & Fuel Co.'s No. 2 Minor, 3,480 ft. S and 1,980 ft. E of NW cor., Sec. 3-18s-16e ..... No report.
The Texas Company's No. 5 State, Dog Lake, 2,270 ft. S and 450 ft. E of NW cor. of Sec. 5-22s-16e ..... Drlg. hard sand 2,500 ft.
The Texas Company's No. 7 La.L.&E., Lake Barre ..... Drlg. 300 ft.
The Texas Company's No. 10 State, Lake Barre ..... Location.
The Texas Company's No. 12 State Lake Barre ..... Set 2 jts. 4½-in. screen 3,809 ft.; comp. flowing 332 bbls. hourly through 1-in. choke; pinched to ⅝-in. choke flowing 740 bbls., 2.8 per cent water, daily.
The Texas Company's No. 14 State Lake Barre ..... Location.

VERMILLION PARISH

Pure Oil Co.'s No. 2 Alliance Trust Co., Gueydan 1,875 ft. E and 950 ft. S of NW cor. of Sec. 34-11-1w... Sand 3,552 ft.; cmtd. 9⅝-in. csg.. 3,515 ft.

WEST FELICIANA PARISH

Putnam Synd.'s No. 3 Como Plantation, Sec. 51-1s-14w... Shut down 2,449 ft.

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS
Pipe Line Statement for February

RUNS

	Barrels	
	Month	Dly. av.
Gulf P. L. Co.	1,289,931	44,480
Texas P. L. Co.	509,355	17,564
Magnolia P. L. Co.	1,240,222	42,766
Empire P. L. Co.	1,690,329	58,287
Cosden P. L. Co.	534,070	18,416
Stanolind P. L. Co.*	3,335,000	115,000
Oklahoma P. L. Co.	2,637,262	90,940
Other lines*	3,469,560	119,640
Total February	14,705,729	507,093
Total January	16,857,069	543,776
Difference	2,151,340	36,683

SHIPMENTS

Gulf P. L. Co.	1,523,319	52,528
Texas P. L. Co.	654,090	22,555
Magnolia P. L. Co.	1,271,511	43,845
Empire P. L. Co.	1,594,560	54,985
Cosden P. L. Co.	627,227	21,628
Stanolind P. L. Co.	3,201,803	110,407
Oklahoma P. L. Co.	2,462,484	84,913
Other lines*	3,886,000	134,000
Total February	15,220,994	524,861
Total January	16,256,583	524,406
Difference	1,035,589	455

STOCKS

Prairie O. & G. Co.*	35,423,000
Gulf P. L. and Gypsy Oil Co.	7,498,946
The Texas Company	3,926,715
Magnolia Petroleum Co.	8,484,103
Empire P. L. Co.	4,825,164
Mid-Continent Petroleum Corp.	3,308,532
Stanolind Crude Oil Pur. Co.*..	16,044,000
Oklahoma P. L. Co.	1,446,708
Carter Oil Co.	5,494,144
Other lines*	15,716,000
Total February	102,167,312
Total January	102,124,015
Difference	43,297

*Estimated.

EASTERN PIPE LINE REPORT FOR MONTH OF FEBRUARY

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for February and March:

	Feb., 1932	Mar., 1932
Nat. Transit	126,753.83	134,250.99
S. W. Pa. P. L.	58,939.34	62,615.59
Eureka P. L.	242,556.95	258,022.38
Buckeye P. L. (Macksburg)	220,174.62	235,934.33
Buckeye P. L. (Cleveland)	10,650.06	12,404.18
Buckeye P. L. (Lima, etc.)	69,769.97	79,282.02
Indiana P. L.	2,432.39	2,736.59
N. Y. Transit	42,479.85	44,698.44
Tide Water P. L.	23,346.91	23,533.01
Pure Oil	291,502.56	386,459.21
Stoll Oil Ref.	60,332.05	50,030.49
Bradford Tran.	358,619.95	376,064.32
Ashland Ref.	101,901.07	107,138.13
Total	1,609,459.55	1,773,169.68
Daily average	55,498.61	57,199.02

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for February and March:

	Feb., 1932	Mar., 1932
Nat. Transit	521,574.03	669,087.25
S. W. Pa. P. L.	393,740.87	420,480.43
Eureka P. L.	284,915.43	244,754.32
Buckeye P. L. (Macksburg)	197,422.31	224,620.23
Buckeye P. L. (Cleveland)	1,468.37	1,959.71
Buckeye P. L. (Lima, etc.)	1,256,890.69	1,382,090.03
Indiana P. L.	684,053.57	902,270.22
Southern P. L.	29,866.72	52,865.15
N. Y. Transit	164,942.57	190,097.74
Northern P. L.	149,660.95	132,597.12
Tide Water P. L.	373,538.58	437,374.91
Pure Oil	323,613.38	415,810.22
Bradford Tran.	252,933.43	419,093.52
Tuscarora	291,210.02	359,490.05
Total	4,925,830.92	5,852,590.90
Daily average	169,856.24	188,793.26

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of February and March:

	Feb., 1932	Mar., 1932
Nat. Transit	714,830.78	643,440.19
S. W. Pa. P. L.	404,242.41	347,019.10
Eureka P. L.	1,260,183.19	1,227,281.45
Buckeye P. L. (Macksburg)	286,436.07	336,057.20
Buckeye P. L. (Cleveland)	47,411.90	27,115.36
Buckeye P. L. (Lima, etc.)	2,956,771.37	3,001,209.10
Indiana, P. L.	513,552.31	510,968.41
Southern P. L.	241,444.27	239,989.94
N. Y. Transit	195,495.84	202,641.18
Northern P. L.	306,733.15	234,026.98
Tide Water P. L.	863,043.42	891,273.80
Pure Oil	889,617.38	869,696.76
Tuscarora	10,806.74	9,772.59
Brad. Trans.	283,781.30	261,700.48
Total	8,974,350.13	8,802,192.54
Decrease	49,564.32	172,157.59

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of February and March, showing gross stocks of the above fields:

	Feb., 1932	Mar., 1932
Pennsylvania	3,178,872.84	2,979,352.40
Lima	599,253.26	595,289.91
Kentucky	10,011.59	9,997.41
Mid-Continent	4,329,220.63	4,397,607.68
Illinois	22,590.52	12,799.24
Michigan	834,401.29	807,145.90
Total	8,974,350.13	8,802,192.54

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1929	1930	1931	1932
Jan.	51,749	75,907	53,939	53,501
Feb.	51,833	79,256	55,163	55,498
Mar.	54,252	76,688	54,331	57,199
Apr.	58,444	84,536	54,914	.....
May	59,902	70,546	53,344	.....
June	58,833	75,430	54,110	.....
July	66,087	68,921	50,723	.....
Aug.	66,087	54,291	51,503	.....
Sept.	67,315	56,595	61,345	.....
Oct.	76,093	58,179	65,595	.....
Nov.	74,831	52,332	59,819	.....
Dec.	74,561	53,999	61,835	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1929	1930	1931	1932
Jan.	165,721	217,623	175,369	186,551
Feb.	159,387	224,355	183,494	169,856
Mar.	161,474	228,846	189,508	188,793
Apr.	169,737	241,845	191,450	.....
May	184,281	248,383	199,247	.....
June	185,404	234,401	221,155	.....
July	194,763	207,094	211,632	.....
Aug.	194,946	205,506	224,166	.....
Sept.	201,214	193,999	217,537	.....
Oct.	191,367	157,675	210,831	.....
Nov.	202,743	146,638	196,425	.....
Dec.	186,257	143,001	176,241	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1930	1931	1932
Jan.	12,220,045	11,831,092	9,023,914
Feb.	12,991,561	11,506,489	8,974,350
Mar.	13,247,217	11,012,162	8,802,192
Apr.	13,233,961	11,044,481	.....
May	13,052,953	10,728,239	.....
June	13,396,855	9,903,349	.....
July	13,268,562	9,569,849	.....
Aug.	13,047,051	9,192,457	.....
Sept.	12,812,018	8,492,431	.....
Oct.	12,437,553	8,417,694	.....
Nov.	11,851,380	8,830,386	.....
Dec.	11,751,952	9,119,032	.....

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, April 1	634,473.03
Runs from wells	542,005.69
Other receipts	60,429.07
Regular deliveries	239,475.27
Other deliveries	264,165.16

The amount of Illinois oil run by the Tide Water Pipe Co. in March was 23,533.01 bbls. Deliveries were 31,142.48 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

	Runs	Deliveries
1932—		
March	565,538.70	270,617.75
1931—		
January	468,429.04	669,573.19
February	429,284.54	461,262.85
March	424,638.23	356,663.26
April	421,814.98	282,532.65
May	433,231.80	322,513.95
June	510,805.78	320,258.13
July	520,009.38	289,219.05
August	476,623.56	393,231.06
September	492,183.83	323,012.50
October	498,124.13	325,834.95
November	470,302.63	281,258.48
December	515,771.28	306,623.19
1932—		
January	500,177.12	246,634.10
February	482,561.50	186,010.30

Tide Water Pipe Co., Ltd., also delivered in March 90,506.96 bbls. Oklahoma oil.

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1931-32—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
April	35,000	10,533	105,000	29,767	35,533	215,833	2,733	3,400	.....	.....	6,133	221,966
May	30,129	8,774	107,000	25,452	26,710	198,065	.....	2,000	.....	.....	2,000	200,065
June	30,067	10,833	111,767	27,000	20,833	200,500	3,300	5,500	2,167	1,333	12,300	212,800
July	26,387	11,226	104,678	29,323	21,773	193,387	6,903	7,419	4,194	.....	18,516	211,903
August	32,613	15,581	91,742	22,387	25,741	188,064	4,161	2,516	.....	3,162	9,839	197,903
September	37,067	7,267	106,867	30,099	22,967	184,267	4,833	8,333	.....	.....	13,166	197,433
October	53,710	14,484	100,774	26,742	40,645	236,355	6,097	6,871	2,097	1,838	16,903	253,258
November	45,033	28,800	51,667	28,600	12,967	170,067	3,933	10,833	3,033	1,367	19,166	189,233
December	20,258	16,806	121,807	31,645	34,258	224,774	1,968	4,355	.....	.....	6,323	231,097
1932—												
January	19,161	8,161	104,065	24,194	34,903	190,484	4,871	7,226	2,096	1,484	15,677	206,161
February	32,483	16,517	128,483	28,862	34,552	240,897	2,034	5,207	4,310	1,379	12,930	253,827
March	25,806	10,516	167,806	38,677	48,129	290,935	5,936	39,774	.....	1,516	47,226	338,161

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1931-32—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
April	5,133	.....	19,200	16,500	10,067	50,900	.....	.....	.....	.. ..	4,000	54,900
May	4,452	3,064	19,903	11,226	6,258	44,903	.....	.....	.....	.....	2,355	47,258
June	4,267	.....	25,100	6,333	3,500	39,200	.....	.....	.....	.....	.....	39,200
July	6,774	1,194	24,612	11,065	9,902	53,548	.....	.....	.....	.....	1,335	54,903
August	3,452	.....	16,419	7,419	4,290	31,580	.....	.....	.....	.....	968	32,548
September	4,267	3,667	12,933	4,699	7,367	32,933	.....	.....	.....	.....	4,000	36,933
October	2,355	1,129	19,290	16,709	9,323	48,806	.....	.....	.....	.....	3,323	52,129
November	1,000	.....	22,800	11,567	.....	35,367	.....	.....	.....	.....	3,366	38,733
December	3,161	.....	22,484	8,839	6,032	40,516	.....	.....	.....	.....	7,742	48,258
1932—												
January	3,871	1,710	14,483	3,774	5,710	29,548	.....	.....	.....	.....	.....	29,548
February	8,069	.....	9,103	4,862	.....	17,034	.....	.....	.....	.....	2,483	19,517
March	1,516	.....	6,065	.....	.....	7,581	.....	.....	.....	.....	.....	7,581

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
1931—										
March:	Month	16,364,842	16,827,687	22,455,619	3,498,598	1,469,245	2,061,676	2,898,035	3,374,000	68,747,602
	Daily average	527,898	536,377	724,310	112,858	47,395	66,502	93,485	108,839	2,217,665
April:	Month	15,803,541	16,815,990	26,887,717	3,281,880	1,413,220	2,008,021	2,901,870	3,272,000	72,384,239
	Daily average	526,785	559,255	896,257	109,396	47,074	66,934	96,729	109,100	2,412,808
May:	Month	16,448,960	17,333,867	28,708,684	3,341,366	1,446,274	2,232,568	3,098,419	3,190,000	75,800,138
	Daily average	530,612	559,157	926,086	107,786	46,654	72,018	99,949	102,900	2,445,166
June:	Month	15,641,436	16,678,200	29,139,833	3,175,440	1,344,450	1,850,511	2,986,200	3,166,000	73,982,070
	Daily average	521,381	555,940	971,327	105,848	44,815	61,684	99,540	105,533	2,466,069
July:	Month	16,093,322	16,420,030	32,827,213	3,089,832	1,287,585	1,715,730	2,905,909	3,341,000	78,680,671
	Daily average	519,139	529,680	1,091,200	99,672	41,535	55,345	93,739	107,774	2,538,078
August:	Month	15,668,984	9,517,279	32,279,816	3,141,322	1,165,669	1,584,444	2,807,148	3,167,000	69,331,558
	Daily average	505,451	307,009	1,041,284	101,333	37,599	51,111	90,553	102,161	2,236,503
September:	Month	15,130,610	7,946,380	28,981,525	3,147,030	1,128,380	1,641,324	2,761,230	3,032,000	64,439,039
	Daily average	506,020	264,896	966,051	104,901	37,946	54,713	92,041	121,067	2,180,968
October:	Month	15,651,983	12,951,893	30,725,173	3,177,066	1,172,389	1,832,255	2,797,597	3,900,000	73,198,356
	Daily average	504,903	417,803	991,134	102,486	37,819	58,782	90,247	125,807	2,328,979
November:	Month	14,997,700	16,430,730	28,860,561	3,131,670	1,130,700	1,851,577	2,706,390	3,639,000	72,748,328
	Daily average	499,922	547,691	962,018	104,389	37,690	61,719	90,213	121,300	2,424,946
December:	Month	16,560,884	16,598,299	27,767,651	3,198,642	1,082,148	1,971,817	2,816,759	3,645,000	72,641,300
	Daily average	501,967	535,429	903,860	103,182	34,908	63,607	90,863	117,581	2,343,266
1932—										
January:	Month	15,532,141	13,664,149	26,410,318	3,170,587	1,101,616	1,792,398	2,444,164	3,566,000	67,681,373
	Daily average	501,037	440,779	851,946	102,277	35,536	57,819	78,844	115,032	2,183,270
February:	Month	14,616,862	11,806,190	23,858,375	2,838,839	1,008,562	1,617,087	2,420,224	3,294,000	61,460,139
	Daily average	504,030	407,110	822,703	97,891	34,778	55,762	83,456	113,586	2,119,315
Total 12 months		187,561,365	172,791,244	339,900,485	38,192,273	14,759,138	22,149,368	33,543,940	41,187,000	850,084,813
Daily average		512,463	472,107	928,690	104,350	40,326	60,517	91,650	112,533	2,322,636

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

OPERATION OF WATER-WITCH

I want to ask for some information about a device called the water-witch, which I understand is used in some fields to locate water in oil wells. Can you tell me, please, what the instrument consists of and how it is operated?—E. R. K.

The water-witch, as it is called, is used in California and some foreign fields and is reported to have proved accurate in more than 95 per cent of the cases where it was tried. Experiments with the instrument in Oklahoma have not been encouraging, it is said. Robert R. Robinson, consulting mechanical engineer of Los Angeles, Calif., who provided the information given here in reply to your question, says the first step in using the water witch is conditioning the well to create a fluid column whose electrical resistance differs measurably from that of the natural well water. This is accomplished by any one of several different methods, depending upon the condition existing at the well and the equipment available. After the well has been conditioned, the "water-witch" is lowered into the well, on an insulated cable.

Cable drum, measuring wheel, control and accessories are all mounted upon a truck. The truck engine furnishes the power for operating the drum through the usual power take-off. Slip-rings on the drum, to which the cable ends are attached, permit continuous supplying of a low potential current to the instrument in the well. Within this instrument are two electrodes, a definite distance apart, and exposed to the well fluids. The cable and the electrodes are connected through the slip-rings on the drum into a wheatstone bridge circuit, which also contains a variable resistance for balancing the circuit.

An alternating current galvanometer allows the operator quickly and accurately to balance the circuit. The value of the balancing resistance is recorded at each depth interval throughout the portion of the well that is being studied. Readings may be taken both on the down trip and the up trip as a check against each other. As the resistance of the cable remains practically constant, the only variable part of the circuit within the well is the fluid existing between the electrodes. The reading of the amount of resistance required to balance this change through the bridge is a direct measure of the resistance of the fluid between the electrodes within the well.

The first run is used as a basis with which to compare subsequent runs. By such a comparison, entrance of foreign fluid from the formation is accurately located, as well as its movement within the well. Between runs the well may simply be standing idle, or it may be bailed from the top to change the head on the sand and allow water to enter from lower head sands or to increase the water entry to give a measure of the volume entering or to determine the relative importance of different sources. Bailing from bottom and adding fluid at the top to replace that bailed off is used to remove salt water or sand, actually amounting to a reconditioning of the hole. The method may be used on wells flowing large volumes of oil and gas as well as on depleted wells.

HOW FIND OIL EXPANSION?

What would be the expansion of 10,000 gallons of 24-26 gravity fuel oil loaded into a car at a temperature of 70, 80, 90, 100 and 150 degrees?

How do you figure the quotations of fuel oil in Group 3? For example, 24-26 gravity fuel was quoted June 16 at 40-45. On June 9 and June 2 it was quoted at 40-50. How is one to know the exact price?

How do you figure the freight rates from the fields to a certain point in Chicago, when a car may go over any one of three or more roads?—P. P.

The calculation relating to the expansion of oil loaded into a car is made, as are other similar calculations, with the use of tables contained in the Bureau of Standards "National Standard Petroleum Oil Tables." This book you can obtain by sending 30 cents to the Superintendent of Documents, Government Printing Office, Washington, D. C.

The fuel oil quotations given on any one date indicate the price range at which most of the material moved on that date. It is impossible to name a specific price. The best that can be done is to publish the price range at which fuel oil of a certain specification was sold on a certain date. As indicated by the figures you quote, this range is wider on some days than it is on others.

The figuring of freight rates is an extremely complicated process. You may be able to obtain an answer to your specific question if you will get into touch with the freight department of any one of the larger railroads entering your city, though it is likely that you will be referred to a traffic bureau. If you do not succeed in getting what you want there, it is suggested that you send your question to the Tulsa Traffic Bureau, Tulsa, Okla. As much work is involved in preparing the analysis showing how certain freight rates are arrived at, you may expect to be charged a fee for the report.

REPRESSURING IN ARGENTINA

I have in hand the study of statistics on oil-producing zones in order to determine the results accomplished by the injection of gas (repressuring). From these statistics there can be derived for each well and each month the following facts:

P = gross production; $\alpha = \frac{a}{P}$; $\beta = \frac{e}{P}$

in which a and e represent the quantity of water and emulsion respectively which can be separated with a centrifugal machine (obtaining these values α and β as the average 2, 3 or 4 for the monthly assays of specimens).

I should like to know:

First, in the equation $\gamma = \frac{a}{P}$ if I call a the water emulsion contained in e, would I be able to recognize the approximate relation between the quantities α, β and γ? That is to say, would I be able to recognize a function $f(\alpha,\beta,\gamma)=0$? If so, what is the function and where can I study the subject?

Second, in the decline curve of the well $(Y+m)t^n=K$, in which m, K and n are the constants, t the time and Y the production, should it be made $Y=P$, or $Y=(\lambda-\alpha)P$, or $Y=(\lambda-\alpha-\beta)P$, or $Y=(\lambda-\alpha-\gamma)P$?

In the various writings on this point that I have had opportunity to read I have not found that point clarified. They talk only of production, without mentioning gross or net. Could you refer me to articles that treat the decline curve of a well? At the same time I would be pleased to have you give me further information regarding a report by Mr. Zaba, which was referred to in an article, "Repressuring Test at Saratoga," printed in The Oil and Gas Journal, August 28, 1930.—M. Q. F., Chubut, Argentina.

WHY WAS IT CALLED THAT?

BUCKBOARD

The buckboard, a four-wheeled, horse-drawn vehicle in which a long elastic board or platform took the place of the usual body, springs and gear, played an important part in the early days of oil. This board rested on the front and rear axles and its bouncing or bucking motion gave the vehicle its name. Simply but strongly built, buckboards were used at first in mountainous districts only, where the roads were rough and rugged.

Hascal L. Taylor, who made a fortune in oil operations in Pennsylvania, was known first by oil men as a member of the firm of Taylor & Day, Fredonia, N. Y., whose buckboards had a tremendous sale in the early oil country.

In answer to the first question, this department knows of no relationship being developed between the terms α, β and γ as you have defined them.

The quantity of emulsion formed in a well is determined by a number of factors, such as type of pump used, condition of balls and seats, volume of gas produced with the oil and water, the presence or absence of colloids, physical properties of the oil and water, etc.

It is conceivable, however, that there may be some relationship between the total quantity of oil produced, the total quantity of water produced, whether the oil and water are produced as such or in the form of an emulsion, and time.

If a relationship could be developed between oil, water and time, it would hold true only so long as the producing conditions in the field, as well as the individual wells, remained undisturbed. In other words, the relationship would be inclined to be highly theoretical and incapable of practical application.

In answer to the second question, it may be said that the equation, $(Y+m)t^n=K$, is a simple hyperbolic function expressing an empirical relationship between rate of production and time and is derived from any decline curve which falls in this class of production, which incidentally is the most common.

The terms in the equation are defined by the quantities used in plotting the decline curve. If net oil production is used in plotting the decline curve, then Y equals net oil production. Net production of oil is generally used since the amount of water produced with the oil has no bearing upon the marketable product as far as valuation work is concerned other than its effect upon the cost of production.

For information on decline curves of wells, it is suggested that you write your ambassador in Washington, D. C., and ask him to obtain for you from the Superintendent of Documents, Government Printing Office, Washington, D. C., copies of the following bulletins prepared by the U. S. Bureau of Mines:

B-228. Estimation of Underground Oil Reserves by Oil-Well Production Curves, by W. W. Cutler, Jr., 1924. 114 pages, 2 plates, 26 figures. Discusses production-decline curve method for estimating recoverable underground reserves of oil and its use for solving operating problems. 20 cents.

B-177. The Decline and Ultimate Production of Oil Wells, with Notes on the Valuation of Oil Properties, by C. H. Beal, 1919. 215 pages, 4 plates, 80 figures. Gives methods for estimating the future production of wells and their application to oil-land valuation; presents detailed information on the production of various oil fields. 30 cents.

It is suggested that you get these bulletins through your Washington representative because the U. S. Government Printing Office does not undertake to send reports to foreign countries owing to the limited supply, but you might be able to get them through the aid of your country's ambassador.

It is not believed possible to obtain any additional information for you from the report of J. Zaba referred to in The Oil and Gas Journal, August 28, 1930. Mr. Zaba is an engineer with the Rio Bravo Oil Co., Saratoga, Tex., and the report he made was confidential and for the use of his own company. It was never published and it is not likely that it can be made available to anyone outside of his company.

ABOUT THE GRANITE WASH

Do all the Texas Panhandle oil wells produce from the Granite Wash? Was the Granite Wash laid down by receding or advancing water?—H. C. P.

It would seem most probable that the granite wash material was laid down during an advancing sea period. This would mean that the ridge from which the granite was broken was subsiding under the waters of the sea which were advancing over the land. This is furthere substantiated by the fact that later formations have covered the Granite Wash material.

Panhandle of Texas oils are obtained from the Granite Wash, from Permian limestone and in a few cases from sands.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas, and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

TREATING CONDITIONS

Would like to know the latest and most up-to-date methods of applying caustic soda and acid to the products of crude petroleum? Also, the quantities to be used and the strength of the material? I would also like to have a definition of octane number?—C. B. K.

The treating method now used for the purification of the light oils derived from petroleum is some form of a continuous process, the oil passing through tanks or coils containing the reagents. Most of the plants manufacturing lubricating oil use the batch system.

The principle involved is for the purpose of removing sulphur compounds, gums, coloring forming substances, and tarry materials. The concentration and quantity of chemicals will vary with the kind and condition of the oil and what is to be accomplished with respect to the quality of the final product. There are a few exceptional oils that yield a high gravity gasoline which needs but little if any treatment, the simplest treatment consisting of a weak alkaline, 1° to 2° caustic soda solution, wash. Very few straightrun gasolines require more than the doctor treatment, but the strength of this and the quantity required varies to a considerable extent.

The regular doctor method is to wash the gasoline first with 1° to 2° Be. caustic soda solution, but if large quantities of hydrogen sulphide are present this strength should be increased. The next step is to pass the product through the lead plumbite solution, assisted with a small quantity of sulphur. The final operation is to wash well with water. The density of the doctor solution may vary from 10° to 20°, probably 12° to 14° will represent the strength most commonly used. The object of the doctor treatment is the removal of the objectionable sulphur compounds, including hydrogen sulphide and mercaptans.

Sulphuric acid is not often required for the purification of gasoline. Sometimes the kerosene distillate is acid treated and the pressure distillate usually has to be passed through the acid before it is rerun to obtain the gasoline. The quantity of acid used may vary from 1 to 12 pounds for the light oil fractions and may be used in very large quantities for the treatment of some lubricating oil fractions. The strength of sulphuric acid ranges from 50° to 66°.

The exact conditions should be determined by a competent chemist.

Octane number is a standard for expressing knock rating of gasoline. It is based on a mixture of octane in heptane, this mixture being adjusted to match the gasoline when tested in a standardized motor. A gasoline of 70 octane number will match a mixture of 70 per cent octane and 30 per cent heptane.

USE OF INDEX OF REFRACTION

I would like to know if the slight variation of the specific refraction, $\frac{n-1}{d}$, in which n is the index and d the specific gravity as developed by Gladstone, is useful for testing oil and wax, especially routine testing, either crude or after treatment. I find specific refraction is a constant for nearly all products from lub fractions. Which is the most accurate sp. gr. measurement or refractive index measurement? Is the specific refraction index any good for testing lubricating oils and paraffin waxes?—J. G. B.

Index of refraction is a property which may be useful when making a very careful study of any one petroleum and the several products derived from it by the process of distillation, filtering, cracking and wax removal, but it does not appear that the determination is adapted to routine testing.

An investigation of certain petroleums of the United States by Francis and Bennett, Petroleum Magazine (Chicago), May, 1921, page 134, indicated small differences for crude oils of varying densities, but that the R. I. of fractions from the same oil increased with increase of specific gravity. The oils of lower boiling points were found to have lower R. I. numbers. Fractions containing saturated paraffin compounds did not refract to so large a degree as the portions containing unsaturated hydrocarbons. As the color is removed from the lubricating oils the refractive index is decreased, but it increases with viscosity. This investigation demonstrated also that the presence of wax caused a lowering of the refractive index of lubricating oil. Wilson and Wilkin describe in Ind. Eng. Chem., 16, 9, 1924, a method which may be used for the determination of oil in wax, which is based on the combination of crystallization of the wax from ethylene dichloride and the R. I. reading.

Concerning the related specific refraction, from $\frac{n-1}{d}$, Gurwitsch-Moore, Petroleum Technology, page 153, gives a table from the work of Engler and Schneider, Erdol i, 116, showing the relation after treatment.

INFLUENCE OF TREATMENT ON REFRACTIVE INDEX AND SPECIFIC REFRACTION

Fraction and treatment—	Sp. gr.	R.I. (n)	Specific refraction $\left(\frac{n-1}{d}\right)$
Original fraction	0.8165	1.4559	0.5576
Same after conc. sulphuric acid; ie., after separation of olefines and aromatics	0.8047	1.4471	.5551
Same after oleum; i.e., after separation part of naphthenes	0.7855	1.4405	.5608
Same after repeated treatment with oleum	0.7786	1.4377	.5622

In comparing the specific refractions of the hydrocarbons of equal boiling point of various homologous series it appears that the smallest values do not appertain to the paraffin hydrocarbons, as in the case with the refractive index, but to the naphthenes, as these possess higher specific gravities. This circumstance may prove of great value in the investigation of the intimate nature of the hydrocarbons of this or that petroleum fraction.

Determinations of specific gravity and refractive index may be made with considerable accuracy without great difficulty. Of course differences in specific gravity of petroleums and petroleum fractions are of greater magnitude than those found for the index of refraction.

QUALITY OF GASOLINE AND MILEAGE VALUE

What effect, if any, does the endpoint of a gasoline have on the mileage obtained? Further, would you be kind enough to advise what elements in the gasoline do determine its mileage value? —O. B. H.

There is no one property by which it is possible to judge and classify gasoline as to economy and performance. If this were not true it would not be necessary to make use of the numerous tests and analytical chemical methods for the purpose of determining the quality of gasoline. Conditions under which gasoline is used have more to do with performance than the fuel and one driver may get more out of the same gasoline in different cars than another driver. When tested under very exact conditions, over the same roads, it has been demonstrated that the gasolines of good quality show but little difference with respect to developing power or making mileage.

Gasoline is graded by means of the several tests which in a general way indicate its quality as a motor fuel. The determinations found by the distillation test show what may be expected in the way of starting, acceleration, staying power, crankcase dilution, and possibly, vapor lock. Any tendency toward corrosion and gumming must be detected by means of the chemical analyses. Endpoint is one of the properties found by the distillation test, and, broadly speaking, the greatest influence of high endpoint is the tendency indicated for the high boiling point hydrocarbons to cause a high percentage of crankcase dilution.

At this time, all other characteristics being satisfactory, the most important property of a gasoline is its knock rating, expressed as octane number. If the compression ratio of an engine is low, the efficiencies of almost all gasolines would be about the same, but the best gasoline would be the one permitting the highest compression ratio. This is equivalent to saying the most economical as to power development in the engine.

The development of the present scheme for rating gasoline according to its antiknock value may be traced through the several different methods that have been employed for the classification of gasoline. They were apparently related to the knocking influence without the fact being recognized. The first property to be stressed was gravity, the higher the gravity of the gasoline the better; hence the expression "high test." Then came volatility, including initial boiling point, the 10 and 20 per cent points, and endpoint, and finally knock rating. It is now recognized that usually a high gravity gasoline has a higher knock rating than a gasoline of low gravity; also, high volatility tends to reduce knock, and very high endpoint is frequently combined with objectionable knocking. Composition too has been stressed and has influenced the use of cracked gasoline, which, when investigated, was found to have its superior quality because of the presence of organic compounds now known to have a pronounced antiknock value. Therefore, the gasoline which will give the highest mileage value is the gasoline possessing all the above indicated desirable properties to the highest degree and containing the objectionable substances, such as sulphur and gum, to the lowest degree.

VISCOSITY GRAVITY CONSTANT LUBRICATING CUT

The viscosity gravity constant of a lubricating oil is given as 0.826. Can you explain just what this means?—T. R. E.

The viscosity gravity constant has been proposed by Hill and Coats, Ind. Eng. Chem., 20, 641, 1928, for use in the classification of lubricating stocks. This was discussed by these authors in the reference mentioned and further explained by Houghton and Robb in the Anal. Edn. Ind. Eng. Chem., April 15, 1931, page 144.

This constant is based on a relation between Saybolt viscosity and specific gravity according to

$$G = A + \frac{1.0752 - A}{10} \log (V - 38)$$

where

A = viscosity-gravity constant.
G = specific gravity at 60° F.
V = Saybolt viscosity at 100° F.

For viscosities at 210° F. the following is used:

$$G = 0.24 + 0.755A + 0.022 \log (V' - 35.5)$$

where V′ = Saybolt viscosity at 210° F.

The viscosity gravity constant of the lubricating cut from Ranger crude is given as 0.827 in the last reference. An alignment chart for obtaining the constant is given in the same reference.

FRACTIONATING COLUMN CONDITIONS

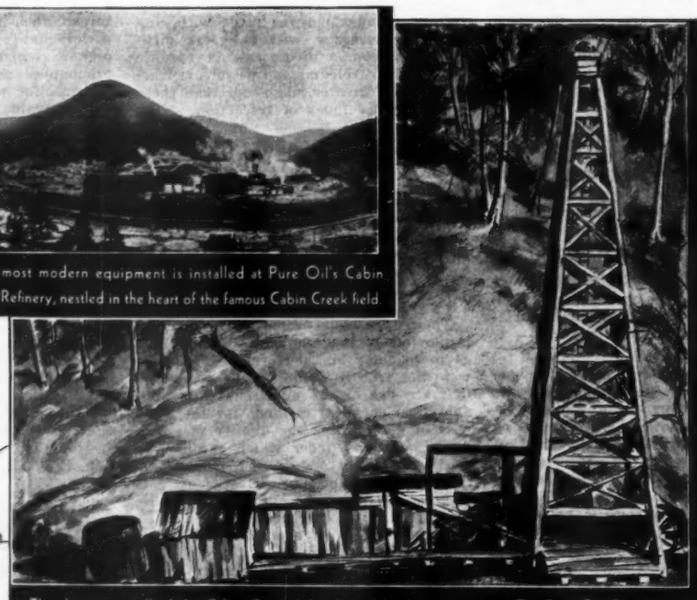
I would appreciate any information you can give me with reference to the mathematical calculation of the temperatures and concentrations of the liquids on the different trays of the natural gasoline fractionator or stabilizer.—R. L. G.

A graphical method for determining the number of plates required for a fractionating column proposed by McCabe & Thiel, Ind. Eng. Chem., 17,605, 1925, depends on the construction of an equilibrium diagram, which is fully illustrated and discussed in Robinson's Fractional Distillation, page 75. A similar discussion may be found in Badger and McCabe's Elements of Chemical Engineering, page 320. Consult also Distillation Principles by Sydney Young. Robinson's book and Badger and McCabe's are both published by McGraw-Hill and the last by Macmillan & Co.

When considering the fractionating column one must remember that usually several conditions have to be assumed. Quoting from Elements of Engineering, page 316, "The performance of any actual column is best understood by comparing it with an ideal column. This ideal column is composed of 'theoretical plates.' A theoretical plate fulfills the requirement that the vapor rising from the plate and passing to the plate above is in equilibrium with the liquid leaving the plate and passing to the plate below. No actual plate will meet this requirement and the degree with which an actual plate, operating on a definite mixture, will approach such an ideal plate may be determined only by experiment."

EVENTS IN THE LIFE OF PURE OIL . . . EPISODE No. 1

• The most modern equipment is installed at Pure Oil's Cabin Creek Refinery, nestled in the heart of the famous Cabin Creek field.



• The discovery well of the Cabin Creek field. It marked the beginning of The Pure Oil Company of today — brought forth from the depths a clean, golden-colored crude oil that set a new standard of quality.

THE ROMANCE of CABIN CREEK

• Section of Cabin Creek field of today, it serves as a model of orderly, economical development.

● In 1914 drills were biting their subterranean course beneath a leasehold in Kanawha County, West Virginia—in search of natural gas. These same drills must have rubbed an Alladin's lamp for they brought forth from the depths—not gas—but clean, clear, golden-colored oil!

● This marked the discovery of the famous Cabin Creek Oil Field—famous for producing the highest quality of Pennsylvania Grade Crude Oil, as well as for its orderly, economical development.

● Today the Cabin Creek field is but one of many owned or controlled by The Pure Oil Company. From crudes of different qualities, Pure Oil can choose the best from which to refine each product. But Cabin Creek crude, from which "Pure" refines Tiolene Motor Oil and high grade industrial oils and greases, still reigns supreme in lubricating qualities. And the discovery of Cabin Creek Field still ranks among the leading romances of the Oil Industry.

The great Pure Oil organization of today is ready to work for you. For any petroleum product, just 'phone, wire or write nearest sales office and expect ACTION!

REFINERIES:
Marcus Hook, Pennsylvania
Cabin Creek Jct., West Virginia
Heath, Ohio
Ardmore, Oklahoma
Muskogee, Oklahoma
Smith's Bluff, Texas
Toledo, Ohio

SALES OFFICES:
Chicago, Illinois
New York, New York
Minneapolis, Minnesota
Philadelphia, Pennsylvania
Pittsburgh, Pennsylvania
Columbus, Ohio
Charleston, West Virginia
Norfolk, Virginia
Atlanta, Georgia
Jacksonville, Florida
Tampa, Florida
Miami, Florida
Pensacola, Florida
Tulsa, Oklahoma
Beaumont, Texas

PRODUCERS, REFINERS, MARKETERS OF A COMPLETE LINE OF PETROLEUM PRODUCTS

THE PURE OIL COMPANY ~ U. S. A.

Personal Paragraphs About Oil Men

Clay Briggs, chief engineer for the Empire Companies, spent a day in the company's Tulsa offices in the past week.

* * *

J. F. McNary, Tarentum, Pa., superintendent for the Equitable Gas Company, is now located at Clarksburg, W. Va.

* * *

S. B. Gray, Longview, Tex., has joined the sales force of Dunnigan Brothers, and is working the East Texas oil field.

* * *

J. N. Pew, Jr., vice president of the Sun Oil Company, Philadelphia, Pa., has returned from a vacation trip to Bermuda.

* * *

William Eustice, sales engineer, A. H. Kasishke, Inc., Oklahoma City, Okla., was recently in Tulsa on business for his company.

* * *

H. K. V. Tompkins has been elected secretary of the Pacific Western Oil Company, succeeding H. O. Ravis, who recently resigned.

* * *

Frank Lawson, who has been drilling at Hurghada, Egypt, arrived recently in Canada and will spend his furlough at Froomfield, Ontario.

* * *

R. E. Allen, assistant umpire for the State of California, has recently returned from a 10-day trip through the Mid-Continent and Texas districts.

* * *

D. J. Cary, superintendent for the Tidal Western Oil Company at Burkburnett, Tex., is now with the Tidal Refining Company at Drumright, Okla.

* * *

Glenn L. Shepherd, refinery engineer, formerly with A. G. McKee & Company, Cleveland, Ohio, is now with Lion Oil Refining Company, El Dorado, Ark.

* * *

J. K. Knox, superintendent of the geological department and Harry Holden, geologist, both with the Phillips Petroleum Company at Bartlesville, Okla., were recent visitors to district offices at San Angelo, Tex.

* * *

Judson T. Welliver, director of public relations for the Sun Oil Company, with headquarters in Philadelphia, Pa., is on a vacation trip to the Panama Canal. Mr. Welliver is convalescing from an attack of pneumonia.

* * *

J. P. Winters, Kansas production superintendent for the National Refining Company, is spending several weeks in Kentucky in supervision of the company's gas properties. Mr. Winters was in Kentucky fields for two months during the past winter and is back checking up the work.

* * *

J. J. Conry, superintendent of production, and George H. Lang, assistant to the president, have been made directors of the Carter Oil Company, with headquarters in Tulsa. Other directors are C. H. Lieb, president of the company; W. T. Funk, vice president and James A. Veasey, counsel.

* * *

James Peat, Canada's oldest oil operator, on April 9 celebrated his ninetieth birthday at Petrolia, Ontario. Born near Glasgow, Scotland, April 9, 1842, Mr. Peat has been a resident of Petrolia since 1870 and has been for more than 60 years actively associated with the Canadian oil industry.

* * *

Mr. and Mrs. Barton A. Myers, of Colombia, South America, are guests of Mr. and Mrs. Edward S. Oberly, of Oil City, Pa. Mr. Myers is identified with the Tropical Oil Company. In their trip north Mr. and Mrs. Myers and O. C. Wheeler, chief geologist of the company, flew from El Centro to Baranquilla in three hours on Easter Sunday. The following day they flew to Jamaica in four hours and the next day to Miami, Fla., with a stop in Cuba. From Florida they came north by rail. After spending a week in Oil City they will make a tour of the West.

Merle F. Gunby, of the Vacuum Oil Company, Dallas, Tex., is now at Norman, Okla.

* * *

R. C. Greene, geologist, Union Oil Company of California, has removed from Long Beach, Calif., to Tulsa.

* * *

O. E. Mitchell, of the Texas Pacific Coal & Oil Company, Thurber, Tex., is now located at Fort Worth, Tex.

* * *

Millard H. Flood, formerly with Louisiana Oil Refining Corporation, Haynesville, La., is now with the Ohio Oil Company at Robinson, Ill.

* * *

Hewlett A. Russell, geologist, formerly with the Texas Producing Company at San Antonio, Tex., is now located with the Cardinal Oil Company at San Angelo, Tex.

* * *

H. D. Frueauff, head of refining and marketing for the Cities Service group of companies, spent several days in Tulsa in the past week at the local offices of the company.

Men of the Industry

Ralph B. Lloyd

Varied interests claim the attention of Ralph B. Lloyd, Los Angeles oil operator and business man. Mr. Lloyd was born February 28, 1875, in Neosho, Mo. He attended the University of California and was active in track athletics.

In 1904 Mr. Lloyd became vice president and general manager of the National Tank & Pipe Co. In 1911 he sold his interest in that company and became active in oil development. With others he bought and leased approximately 14,000 acres of land on the apex of the Ventura dome and made preliminary explorations and sufficient discoveries to attract the attention of the large oil corporations, eventually interesting the Shell Oil Co. of California and the Associated Oil Co. In many of his oil operations Mr. Lloyd has been associated with Joseph B. Dabney.

Mr. Lloyd is president and general manager of the Ventura Land & Water Co.; president of the Lloyd Corp., director in the California Walnut Growers Association; director of the Security First National Bank of Los Angeles and of the United States National Bank of Portland, Ore.; and president of the Oil Producers Sales Agency of California, which he organized.

L. M. C. Seamark has returned to London from a visit to Persian and Rumanian oil centers.

* * *

J. A. Moffett, vice president of the Standard Oil Company (New Jersey), is visiting the company's subsidiary and affiliated companies in England and in Continental Europe.

* * *

Desaix B. Meyers, chief geologist of the Union Oil Company of California, has just returned to the company's headquarters in Los Angeles after making a tour of Texas fields.

* * *

L. A. Garrard, an executive of the Standard Oil Company of New York, with headquarters at Shanghai, was a recent visitor in California but has subsequently returned to the Orient.

* * *

Caspar A. Ruf, auditor, Parkersburg Rig & Reel Company, Parkersburg, W. Va., is making a tour of the Mid-Continent district offices for his company. He was in Tulsa last week.

* * *

J. W. Miller, until recently manager of the southern division of the Shell Service, Inc., a subsidiary of the Shell Oil Company of California, has been appointed president of the former company.

* * *

L. L. Foley has been appointed petroleum engineer for the Mid-Kansas Oil & Gas Company, Tulsa office. Mr. Foley was formerly assistant to Frank R. Clark, chief geologist for this company.

* * *

William Durkee, formerly vice president of Shell Service, Inc., has been appointed manager of the southern division of the Shell Oil Company's general sales department with headquarters in Los Angeles.

* * *

Dr. S. J. M. Auld, O.B.E., manager of the engine-building department of the Vacuum Oil Company, Ltd., has been elected a member of council of the Institution of Petroleum Technologists, and A. Frank Dabell, T. R. H. Garrett and Prof. A. W. Nash have been re-elected members for the ensuing year.

* * *

J. A. Warren, of Denver, Colo., secretary of the Kinney-Coastal Oil Company, is in St. Johns Hospital at Salina, Kans., recovering from a severe injury which may result in the loss of sight in one eye. While aiding in some emergency work at a well in the Twin Mounds Pool which was about to be brought in, a steel sliver entered his eyelid and lodged in the back part of the eyeball.

* * *

Robert Hazlett, son of A. J. Hazlett, editor of the Inland Oil Index, of Casper, Wyo., was seriously injured in an automobile accident between Boulder and Denver last week. Young Hazlett, with three other students at the University of Colorado, were on their way to Denver when the car in which they were riding swerved from the road. While all received some injuries, Mr. Hazlett was the most seriously hurt. Several ribs were broken and his back was badly wrenched. He is reported out of danger, but will have to remain in a plaster cast for several months.

* * *

A conference of refinery officials of The Texas Company from New York and the various plants was held at the Port Arthur, Tex., refinery during the past week to study new operative methods. Those attending included the following from New York: V. R. Currie, S. W. Darling, R. D. Swan, F. N. Tyacke, W. C. Adams, R. C. Powell, R. Van Deerlin, S. W. Johnson, D. P. Dailey, R. Amundsen, A. S. Harry, T. C. Plumb, A. E. Manley, W. B. Williams, A. S. Patrick, J. A. Triske, J. W. Creighton, F. M. Everett, L. W. Vincent and St. C. B. Byrne. Others from the various plants included: G R. Bryant, Lawrenceville, Ill.; W. C. Wakefield, Casper, Wyo.; P. T. Williams, Wilmington, Calif.; H. P. Creel and E. L. Cargill, Tulsa; and T. R. Remy, Los Angeles, Calif. Fred Dodge, superintendent, represented the Port Arthur refinery.

Natural Gas Industry Developments

ST. LOUIS COUNTY GAS FILES MIXED GAS RATE

St. Louis County Gas Co., Webster Groves, Mo., has filed with the Missouri Public Service Commission a proposed reduction in rates for service of a mixture of natural and manufactured gas. The new rates provide reductions of 18.4 per cent for domestic gas service; 36.1 per cent for house heating, and 31.7 per cent for industrial use.

The company has about 40,000 customers, and plans to obtain its supply of natural gas from the Missouri Industrial Gas Co., which has contracted to purchase gas from the Mississippi River Fuel Corp., operating a 22-inch pipe line from the Monroe and Richland fields of Louisiana.

The proposed schedule of rates for St. Louis County are:

First 200 feet or less, 53 cents; first 10,000 feet, per thousand, $1.05; next 20,000 feet, 95 cents; next 20,000 feet, 85 cents; next 20,000 feet, 80 cents; next 20,000 feet, 75 cents over 100,000 feet, 70 cents.

The existing schedule for 570 B.t.u. gas is:

First 10,000 feet, per thousand, $1.05; next 15,000 feet, $1; next 25,000 feet, 90 cents; next 25,000 feet, 80 cents; next 25,000 feet, 70 cents; over 100,000 feet, 65 cents.

The average monthly consumption of domestic users is 2,950 feet of 570 B.t.u. gas, which is the equivalent of 2,100 feet of mixed gas.

KANSAS RATE CHANGES

TOPEKA, Kans., Apr. 16.—Voluntary changes in gas rates filed by utilities for Kansas towns and communities have been approved by the Public Service Commission.

The American Gas Co. filed a flat rate of 50 cents a thousand in Oswego. The present rate is 65 cents.

The commission approved a gas rate filed by the Eastern Kansas Pipe Line Co. for Moran, $1 for the first 1,000, 50 cents a thousand for the next 19,000, and 45 cents a thousand for the balance, with a $1 minimum charge.

The Kansas Electric Power Co. made an initial filing of a gas rate for Leavenworth customers using more than 15,000 feet a month, scaling down to 25 cents a thousand for above 500,000 feet a month.

Initial optional industrial gas rates were filed by the Garden City Gas Co. and the Argus Pipe Line Co. of Dodge City, the latter serving 14 towns. The Argus schedule now is in effect.

GAS EXPORT ASKED

CHATHAM, Ontario, Apr. 16.—A resolution submitted in the Alberta legislature by J. Russell Love, member for Wainwright, asked approval of the export from Alberta of natural gas from fields not reserved or necessary for use within the province. The resolution, while applying to all such fields, was primarily intended to permit the export of gas from the Wainwright Field to Saskatoon, Saskatchewan.

CUT CALIFORNIA WASTAGE

LOS ANGELES, Calif., Apr. 16.—Natural gas wastage has been reduced by effective application of the 1929 gas conservation act, D. H. Blood, director of natural resources, was informed by R. D. Bush, state oil and gas supervisor. Mr. Bush filed a report showing gas waste during January was 55,000,000 feet per day, compared with estimated waste in 1929 of 500,000,000 feet daily.

ECONOMIC AVAILABILITY OF OIL AND GAS FOR PROCESS HEATING

By George W. Uzzell
Ohio Oil Co., Findlay, Ohio

Keen competition has existed for many years between the different sources of heat. Prior to 1900 coal was the mainstay of industry and its consumption throughout the United States was steadily increasing. Since 1912 the production of coal has increased less rapidly. During the same period the production of petroleum has expanded four times in volume and with the accompanying phenomenal expansion of the natural gas industry has become an important factor in keeping the coal production at a stationary level. The records indicate that at the present time, coal supplies 74 per cent of the fuel demand, natural and manufactured gas 14 per cent and oil 12 per cent. Oil and gas together accounting for a total of 26 per cent.

Two trends of interest affecting the future supply of fuel oils may be pointed out. First, that although the percentage of yield has been declining, the actual volume of fuel oil available has steadily increased due to the continual increase in crude oil production. The decline in 1930 is attributed to the business recession of the country and natural gas competition. Secondly, that fuel oil production is increasing at a lesser rate than the crude oil production.

The last 10 years has shown much progress in the efficiency of fuel oil combustion. An increase in efficiency, however small, contributes immediately to a greater profit for an individual plant through a saving in fuel costs and the aggregate savings at all plants will add to the effective fuel supply of the nation as a whole.

The tremendous increase in natural gas service in the United States in recent years is not generally appreciated. Over 2,800,000,000,000 feet of gas were consumed in the United States in 1929, representing the equivalent of 114,000,000 tons of coal, over one-sixth of the coal production. Of this quantity 80 per cent was natural gas and gases produced in refining oil. Although the magnitude of these figures is more or less incomprehensible, yet we are made to believe that more natural gas has been wasted than has been utilized. Today, however, more constructive economic and engineering treatment is being employed in conserving the supply. Every effort is being brought to bear on the elimination of the tremendous wastes which characterized the past.

Gas is an ideal fuel and many consumers employing process heating find it particularly suitable because of the ease with which accurate temperature and furnace control can be maintained. These factors are important features in the production of uniform and high grade ceramic products and enamelled ware, and in the operation of open hearth, melting, forging, annealing, tempering and hardening furnaces. In the melting of brass, gas is particularly desirable as the variation in the composition of this metal is largely due to oxidation and volatilization.

Eighty per cent of the natural gas produced in the United States is put to industrial use while 20 per cent meets domestic requirements. The largest group of consumers are the oil producers and refiners.

It is a difficult matter to obtain figures on the potential available gas reserves and estimating is a hazardous performance, but those who have supplied the capital for this great distributing system exhibit faith in the future supply of natural gas and show confidence in the belief that tremendous quantities of gas exist in the reservoir tapped which will serve the country for many years. Estimates of one sort or another have set the probable life of these large deposits at from 50 to 200 years.

GAS FOR FARM COMMUNITY

MOUNT PLEASANT, Mich., Apr. 16. The Consumers Power Co. of Michigan has applied for a natural gas franchise in Deerfield Township, Isabella County, and plans, if the franchise is approved, to offer natural gas to homes in that township. This marks the first attempt of the Consumers Power Co. to expand its natural gas service system to farm users in Isabella County. The company has an 8-inch gas main running from the prolific Broomfield gas fields west of Mount Pleasant to Midland, where since last fall the Consumers company has been supplying natural gas. The main line extends through Deerfield Township. Deerfield Township is adjacent to Broomfield Township where 11 gas wells with a potential daily flow of approximately 48,000,000 feet are located.

TALIHINA FRANCHISE

H. A. Shallenberger, Muskogee gas and oil operator, has been granted a gas franchise at Talihina by a vote of 154 to 5. The franchise will run for 25 years and provides for rates ranging from $1 per 1,000 feet to 20 cents per 1,000.

Work will be started immediately on drilling new wells, Shallenberger said, and it is expected that by September 1 quantities of gas sufficient for industrial needs will be available.

SECOND SAN FRANCISCO LINE

LOS ANGELES, Calif., Apr. 16.—Operations are under way on the second feeder line into San Francisco, supplying gas from Kettleman Hills. Pacific Gas & Electric Co. reports the line will consist of 45 miles of 26-inch pipe and will cost approximately $1,870,000 with completion scheduled within six months.

Starting at the San Mateo-San Francisco line, the line will follow Skyline Boulevard to west of Palo Alto, where it will run to near the Sunnyvale airship base and through Alviso to the Milpitas metering station, joining the main Kettleman-Milpitas carrier. Seven miles of the line in San Francisco limits are nearing completion.

CANADIAN RIVER HEARING

AUSTIN, Tex., Apr. 18.—The Railroad Commission has set for hearing at Austin, April 26, application of the R. B. Masterson estate for an order preventing discrimination by the Canadian River Gas Co. in the purchase of gas from its leases in Potter and Moore Counties.

NEBRASKA FRANCHISE

American Natural Gas Co., said to be a subsidiary of the American Gas Construction Co., Minneapolis, Minn., is reported asking for franchises in Alliance, Crawford, Chadron, and Hemingford, Neb.

QUINCY-HANNIBAL LINE EXTENDED TO PALMYRA

Panhandle Eastern Pipe Line Co., Kansas City, Mo., has begun operations on its 25-mile, 10-inch line from Hannibal, Mo., to serve Quincy, Ill. A 5-mile lateral will also be extended from Palmyra, Mo. The new carrier will leave the Hannibal line several miles west of Hannibal and extend almost directly north to the Mississippi River near the South River in Marion County where two lines of 8-inch pipe will be placed on the bed of the Mississippi River approximately 3,300 feet long, placed in a 6-foot trench in the bottom of the river silt. River clamps weighing 2,500 pounds will be fastened 100 feet apart.

From Marblehead, Ill., a line will be run by the Panhandle Illinois Pipe Line Co., to Quincy and will connect with the lines of the Central Illinois Public Service Co., now serving manufactured gas.

In Palmyra the gas will be distributed by the Central States Gas Utilities Co., subsidiary of Panhandle Eastern Pipe Line Co.

NEW McPHERSON RATES

McPHERSON, Kans., Apr. 18.—As the outcome of conferences between the city and the officers of the McPherson Gas Co. an agreement reached on rates, relieves the city of the purchase of the privately owned distirbuting system and of the need for establishing a municipal system.

The new schedule of rates follows: First 2,000 feet at 50 cents; next 50,000 feet at 30 cents; next 50,000 feet at 25 cents; next 98,000 feet at 15 cents; next 800,000 feet at 14 cents; next 1,000,000 feet at 13 cents; excess at 12 cents.

The former rates were: First 1,000 feet at $1; next 19,000 feet at 50 cents; next 80,000 feet at 40 cents; next 300,000 feet at 25 cents; next 600,000 feet at 22½ cents; excess at 20 cents.

CANADIAN GAS PRODUCTION

CHATHAM, Ontario, Apr. 16.—Natural gas production from all Canadian fields in January amounted to 3,220,087,000 feet compared with 2,899,290,000 feet in December, and 3,200,000,000 in January, 1931. Of the January, 1932, production, 74.4 per cent was from Alberta wells, 23 per cent from Ontario and 2.6 per cent from New Brunswick.

Field records show that in the Turner Valley Field in January 146,000 feet of gas was required to produce a barrel of naphtha, compared with 136,000 feet in December.

Imports of mixed (natural and artificial) gas into Canada totaled 11,787,000 feet in January compared with 8,507,000 feet in December, an increase of 38.6 per cent.

COLUMBIA, MO., CHANGE

JEFFERSON CITY, Mo., Apr. 18.—The Missouri Utilities Co. has been authorized by the State Public Service Commission to reconstruct its present gas distribution system at Columbia for the purpose of supplying natural gas. The Columbia city council recently approved the change from artificial to natural gas.

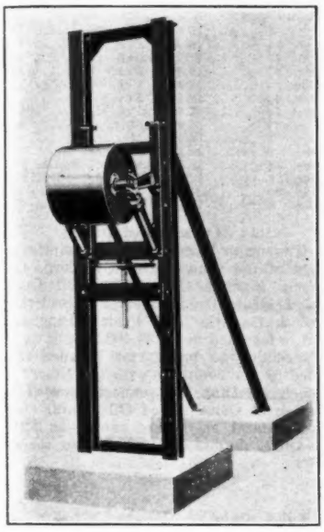
TWO STATES DEFEAT SALES BAN

E. F. McKay, manager of the Oklahoma Utilities Association, states bills to stop merchandising of appliances by public utility companies, similar to laws adopted in Oklahoma and Kansas last year, have been defeated by the legislatures in Massachusetts and Mississippi.

Oil Industry Equipment and Supplies

BELT TIGHTENER OF NEW TYPE MADE BY NATIONAL

The National Supply Cos., Toledo, Ohio, have perfected and are now offering for sale in the oil country the National type SR belt tightener, designed to apply tension automatically to stand-



ard rig endless belts. It is of the floating type and will maintain correct tension with varying conditions of loads and atmosphere, a feature that adds materially to the life of endless belts.

The tightener consists of a sliding carriage closely guided in a vertical frame with pulley mounted in a swinging bracket pivoted to the carriage. Alloy steel springs furnish the tightening force and adjustments can be made with the belt in motion. The carriage can be clamped in any position and the pulley locked at top or bottom of the float to eliminate the floating feature when pulling rods or tubing.

The available tightening force, registered by an indicator, covers the entire range needed for ordinary installations. Excessive stretching of a new belt due to overload is eliminated as the tightener permits holding the exact tension necessary to transmit the load without slippage.

Easy adjustment is effected by means of an adjusting screw which fastens to either end of the carriage and anchors to the frame in various positions. During the top half of the travel, the adjusting screw fastens to the bottom end of the carriage and the handwheel is below the pulley. For the bottom half of the travel the screw is attached to the top end of the carriage and the handwheel is above the pulley. The location of the handwheel is therefore most convenient for the operator. In its highest position the handwheel is approximately 6 feet above the foundation. Full travel of the carriage is gained without removing the carriage from the frame.

The steel pulley is mounted on Timken roller bearings of ample capacity. The stationary pulley shaft is adjustably mounted in the swinging bracket to permit pulley alignment. Alemite lubrication is provided for these bearings. The pivot points of the bracket and spring connections are provided with graphite and bronze bushings. These bushings insure long wear with even infrequent lubrication. Descriptive literature giving complete details is available upon request.

NOTES ABOUT TRADE LITERATURE

Hill Clutch power drive equipment is described in catalog 29-A, being distributed by the Hill Clutch Machine & Foundry Co., 6400 Breakwater Avenue, Cleveland, Ohio. The 40-page booklet contains a description of the "Cleveland type" patented oil-film bearing.

A four-page bulletin in colors issued by the Broderick & Bascom Rope Co., St. Louis, Mo., asks "Why is a 'Flex-set' preformed wire rope like a carefully broken-in automobile?"

The Stoody Co., Whittier, Calif., is mailing a leaflet telling about "Uniform Borium Shapes."

"How to Run a Lathe," a 160-page volume published by the South Bend Lathe Works, South Bend, Ind., is now in its thirtieth edition and the company states that 1,250,000 of these handbooks have been distributed since the first edition was offered. It forms a helpful reference book for machinists. A charge of 25 cents is made. Among new pages in the latest edition is a section on "Blueprints for the Shop."

A new bulletin describing Bailey boiler water level recorders has been published by the Bailey Meter Co., Cleveland, Ohio.

"Price Cutting Versus Efficiency" is among interesting articles in the current number of the Gardner-Denver News, published by the Gardner-Denver Co., Quincy, Ill.

Two mailing pieces are being distributed by the Caterpillar Tractor Co., Peoria, Ill., one an 18-page booklet about the Caterpillar elevating graders and the other broadside on the Caterpillar Fifty grader.

The S. M. Jones Co., Toledo, Ohio, is sending out a 12-page bulletin on "Properties in Sucker-rods, with a Comparative Analysis of Various Makes."

The Baldwin-Southwark Corp., Philadelphia, Pa., has issued a 36-page illustrated bulletin devoted to Southwark-Emery testing machines.

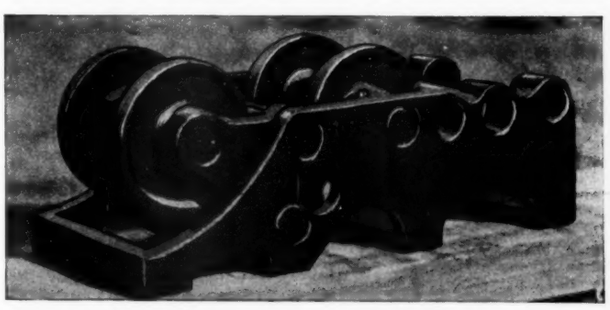
Vogt heat exchangers are described and illustrated in bulletin HE-2, a four-page publication prepared by the Henry Vogt Machine Co., Louisville, Ky.

How field inspection of pipe line welds is simplified by development of the portable tensile testing machine, to be carried in the inspector's car, is told in the April number of Oxy-Acetylene Tips, published by the Linde Air Products Co., New York.

Announcement of a new refractory brick, Laclede Mullet, is made in a four-page bulletin sent out by the Laclede-Christy Clay Products Co., St. Louis, Mo

Bulletins issued by the Worthington Pump & Machinery Corp., Harrison, N. J., describe stationary Diesel engines, four-cycle direct-injection type; eight-page bulletin S-500-B5A covering 50 to 150 horsepower sizes; six-page bulletin S-500-S5 covering 150 to 300 horsepower sizes; 12-page bulletin S-500-B7 covering 225 to 450 horsepower sizes; six-page bulletin S-500-S4 covering 300 to 600 horsepower sizes, and six-page bulletin S-500-S6 covering 375 to 1,000 horsepower sizes.

ANY SIZE PIPE IS HANDLED BY PIPE-EJECTING DOLLY



The Cardwell-Allsteel pipe-ejecting dolly, introduced by the Allsteel Products Manufacturing Co., Wichita, Kans., was developed with the co-operation of pipe line contractors, superintendents and welding and lineup foremen. According to the manufacturer, the device has these advantages:

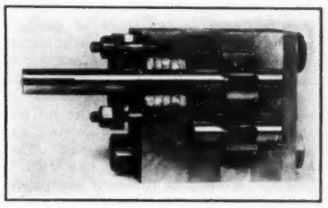
Instantly adjustable for any size pipe, only one set being needed to handle all jobs. Wide enough to rest solidly on any surface. Wheels close together so that dolly does not "cock" during lineup. Each wheel turns independently. Wheels always run true and freely, making it easy to handle long strings of any size for tack weld and roll weld. One man with pinch bar and hammer removes pipe after roll welds are completed. All-steel construction permits rough handling without damage.

The dolly is sturdily constructed of high-grade material and castings and may be handled the same as any other pipeliners' tools without danger of breakage or throwing out of adjustment. It is adjustable for any size pipe from 4 to 30-inch outside diameter, by simply removing one cotter-key and pin, and placing in the proper hole for the selected size of pipe.

To eject pipe from the dolly, it is only necessary to place a swaged-end bar, such as a pinch bar, under the trip pin and strike with a hand hammer. The pipe then rolls off toward the ditch. The frame is of solid cast steel, one-piece construction. The trip-frame is of cast steel, one-piece. Four independent cast steel wheels are accurately machined with 1-13/16-inch long hubs to insure free turning, and with sufficient bearing to insure that they always run true. The shafts are of 1-inch cold rolled steel. The dolly is 5⅜ inches high, 6 inches wide and 14 inches long. Its net weight is 27 pounds.

NORTHERN INTRODUCING NEW SERIES OF PUMPS

A new and larger series of nitralloy steel pumps, to be known as the XE series, is announced by the Northern Pump Co., Minneapolis, Minn. Using the same laminated plate construction, worked out in two smaller series XA and XD, the company now has nitralloy



pumps in capacities from one-fourth g.p.m. to 42 g.p.m. at 1,200 r.p.m. This new series XE capacity range is from 14 g.p.m. to 42 g.p.m. at 1,200 r.p.m.

The extreme hardness of nitralloy steel (1,000 Brinell) makes these pumps adaptable for all types of oil services, including the handling of dirty crude oils and distillates at high pressures. For nonlubricating oils, the XE pumps would be equipped with nitralloy plate bearings. Roller-bearing pumps handling clean lubricating oil would be good for pressure up to 1,600 pounds on continuous service. Because of the high efficiency and wear-resisting qualities, these nitralloy pumps with roller bearings will be suited for hundreds of hydraulically operated mechanisms. The same XE pumps built with nitralloy bearing plates are expected to find a ready market for fuel oil burners in industrial plants and for all types of transfer service where nonoxidizing liquids are to be handled.

NEW DEARBORN PRODUCT CLEANS CLOGGED PIPES

The Dearborn Chemical Co. of Chicago, for 45 years engaged in a chemical engineering service to railways and industrial plants, is marketing a product called Plumite, an unadulterated chemical solvent, which destroys organic matter in drain pipes, keeping pipes open, free running and sanitary. It is packaged for the retail trade in a can containing 14 ounces. Plumite is odorless, a new development in drain solvents. A complete line of equally effective cleaners is sold in larger packages, for industrial use. The company serves its clients in correction of boiler feed waters and allied problems, rust prevention and scientific lubrication.

HIGH-SPEED FAN BELT IS DEVELOPED BY GOODRICH

Recognizing the growing tendency toward higher engine speeds in the automobile industry, the B. F. Goodrich Co., Akron, Ohio, has developed a high-speed fan belt which the manufacturer says has passed every rigid test up to 5,000 r.p.m.

To produce this belt it was necessary to design a new dynamometer set and an entirely new line of machines, according to J. H. Connors, Goodrich vice president.

OPENS UP BENTONITE DEPOSIT

The Thurber Earthen Products Co., Fort Worth, Tex., has opened up a large deposit of Bentonite, or filter clay, said to be especially suitable for contact filtration near Woodward, Okla. The company has a crushing and drying plant which already has begun operation.

H. F. Sinclair Discusses Operations

Avoidance of Overproduction of Gasoline, Multiplication of Stations and Limiting Excessive Margins Needed

Discussing operations of the Sinclair Consolidated, H. F. Sinclair, chairman of the executive committee of the Consolidated Oil Corp., said:

"Operations of the corporation in 1931 were carried on under the difficulties of the severe business depression and in our own industry the unfavorable conditions marked by low prices and in some departments a slackening of demand. The maladjustment in the price of crude oil and refined products has continued, the return upon refined products not justifying even the prices—less, as a rule, than cost of production—at which crude has been sold. Improvement in the oil business will, of course, largely depend upon betterment in general conditions. There are evidences, however, in our own industry of a purpose to avoid overproduction and to place the marketing of petroleum products, especially gasoline, upon a sounder basis, restrict the multiplication of service stations and limit excessive margins. It is by these means that the earning power of the industry can be restored.

"The directors and officers of the corporation desire to express their appreciation of the loyal support accorded to the management by the stockholders. To a total of some 57,300 holders of Sinclair preferred and common shares there have now been added about 23,000 shareholders in the Prairie Pipe Line and Prairie Oil & Gas companies."

Commenting on the pro forma balance sheet of Consolidated Oil as of January 31, Mr. Sinclair said that the valuations of the consolidated properties had been written down to a conservative level. He called attention to the company's current assets of $135,156,359, which were about 8½ times current liabilities of $16,100,007.

Tide Water Oil

Tide Water Oil Co. has declared the regular quarterly dividend of $1.25 per share on the preferred, payable May 16 to stock of record April 16.

Barnsdall

Barnsdall Corp.'s new $5 par stock, representing a share for share exchange with the old Class "A" common, was substituted for the latter in Stock Exchange transactions this week. The committee on securities ruled that Class "A" stock may be settled by delivery either of certificates of Class "A" or certificates of the new common. Certificates of "A" stock are deliverable to and including April 21 against sales of the new common.

Amerada Corp.

Amerada Corp. reports for 1931 net loss of $1,701,647 after depreciation, depletion and drilling costs, and year-end inventory writeoffs. This compares with net earnings of $3,961,476 in 1930. The company during 1931 purchased in the open market a total of 87,400 additional shares of its own stock at an average cost of $15.51 a share, or a total of $1,355,287. At the close of the year the company held 155,800 shares of its own stock out of a total of 922,075 shares issued.

E. L. DeGolyer, chairman, and A. Jacobsen, president, state in their report that the company has operated at a small margin of profit since last October, despite low crude prices and stringent production curtailment, and the company's position is such that even the small increase recently posted on crude oil prices will enable satisfactory profits.

Current assets as of December 31, last, were $7,160,795 against current liabilities of $397,913, a ratio of 18 to 1, comparde with a ratio of 13 to 1 at the close of 1930.

Derby Oil

Derby Oil & Refining Corp. reports for 1931 net income of $45,280 after depletion, depreciation, taxes and inventory adjustments. The company, together with its subsidiary, Industrial Petroleum, earned $673,142 after charges in 1930, of which $671,975 was applicable to Derby.

Panhandle Producing

Panhandle Producing & Refining Co. and subsidiaries report for 1931 net loss of $515,644 after taxes, intangible development costs, depletion, depreciation, and interest. This compares with net loss of $449,401 in 1930.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Wednesday, was as follows:

Oct. 7	15.83	Jan. 13	13.63
Oct. 14	16.43	Jan. 20	13.14
Oct. 21	17.58	Jan. 27	12.79
Oct. 28	16.80	Feb. 3	13.19
Nov. 4	18.86	Feb. 10	12.02
Nov. 11	18.76	Feb. 17	13.28
Nov. 18	17.60	Feb. 24	13.45
Nov. 25	16.68	Mar. 2	13.61
Dec. 2	16.09	Mar. 9	14.28
Dec. 9	15.38	Mar. 16	13.60
Dec. 16	12.60	Mar. 23	13.62
Dec. 23	12.06	Mar. 30	13.85
Dec. 30	21.31	Apr. 6	12.12
Jan. 6	12.69	Apr. 13	11.31

Consolidated Oil

The write-down in the net capital assets of the Consolidated Oil Corp. (formerly Sinclair Consolidated Oil Corp.) as incidental to its merger with Prairie Oil & Gas Co. and Prairie Pipe Line Co., amounted to $137,493,288, it is revealed in the pro forma balance sheet filed by the company with the New York Stock Exchange in connection with the listing of Consolidated Oil capital stock. Net capital assets are shown as $214,444,482, against $351,937,770 in the pro

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending April 9)

1932 High	1932 Low	Week ended April 9 Sales	Week ended April 9 High	Week ended April 9 Low	Close Apr. 13	Stocks—		Outstanding capital	Par value	Div. rate	Payable or last paid	1929 High	1929 Low	1930 High	1930 Low	1931 High	1931 Low
¾	¼	11,300	¾	⅝	½	American Maracaibo	(sh)	700,000	N.P.	....	.....	8⅝	1⅛	4½	½	1¾	¼
2¾	1⅛	1,900	1⅝	1⅛	1⅜	Arkansas Natural Gas	(sh)	4,084,235	N.P.	....	.....	26	3¾	16¾	4⅝	6½	1⅞
2⅝	1⅜	10,500	1⅝	1⅜	1¼	Arkansas Natural Gas "A"	(sh)	3,522,521	N.P.	....	.....	24¾	6½	16⅝	4⅝	6¾	1⅞
5½	4¼	1,600	4¾	4⅜	4¼	Arkansas Natural Gas pfd.	(sh)	2,193,000	$10	15cQ	4- 1-32	9	4	8⅛	6¼	7	3⅞
9¾	8½	No sales	..	..	..	British American Oil Corp.	(sh)	2,622,642	N.P.	20cQ	4- 1-32	62	7⅞	23	13⅜	16⅞	6¼
⅝	¼	500	⅜	⅜	..	Carib Syndicate		$131,250	25c	....	.....	4⅞	1	2¾	⅝	2⅜	¼
6⅞	3½	252,100	5¼	3½	4¾	Cities Service	(sh)	24,290,359	N.P.	30cA§	5- 2-32	68½	20	44¼	13	20¾	5
53⅜	40	4,200	48	40	42½	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	5- 2-32	98¾	84	93⅞	78¼	84¾	35⅜
1⅛	1/16	400	1/16	1/16	..	Colombia Syndicate		3,250,000	N.P.	....	.....	..	..	21	3⅜	7⅛	1
1⅞	⅝	3,700	1	¾	⅝	Columbia Oil & Gasoline v.t.c.	(sh)	$2,000,000	$1	....	.....	2	½	⅝	⅛	½	1/16
⅝	⅜	100	⅝	⅝	..	Colon Oil	(sh)	2,200,000	N.P.	....	.....	15	3⅞	8¼	1⅛	3⅛	¼
1	1	200	1	1	1	Consolidated Royalty Oil Co.		$5,527,880	$10	5cQ	4-25-32	11⅛	2½	5⅞	2	2¾	1
1	½	No sales	..	..	½	Cosden Oil	(sh)	323,950	N.P.	....	.....	135	42	74¾	1¼	3¾	⅜
2¼	1⅝	No sales	..	..	2½	Darby Petroleum		1,019,392	N.P.	....	10-15-30	26	6½	21¾	4¼	5	1¾
2⅛	1½	300	1¾	1½	..	Derby Oil & Refining	(sh)	500,000	N.P.	....	.....	11	2	11	2	6	1½
24½	18⅞	350	21⅜	18⅞	..	Derby Oil & Refining pfd.		48,500	N.P.	....	.....	44	20¾	60	30	40⅛	25
35⅞	25⅝	4,300	32⅛	30	27½	Gulf Oil Corp.	(sh)	4,504,921	$25	....	10- 1-31	209	115	166⅞	58½	75½	25⅝
4½	3½	300	3⅝	3½	..	Indian Terr. Oil "B"	(sh)	7,090,037	N.P.	....	.....	..	..	53½	12⅝	16⅞	5
¼	1/16	1,500	⅛	1/16	..	Intercontinental Petroleum		$5,682,000	$5	....	.....	2⅞	⅜	1¾	⅜	⅝	⅛
⅝	⅜	300	½	½	..	Kirby Petroleum	(sh)	750,000	N.P.	....	.....	3⅝	1¼	3	⅞	1⅞	¼
½	1/16	No sales	..	..	..	Leonard Oil & Development		$50,000,000	$25	....	.....	14⅞	2½	5	¾	2	½
⅞	½	3,000	⅛	⅛	⅝	La. Land & Exp.	(sh)	3,000,000	N.P.	....	.....	6⅛	1	4¾	½	1½	¼
2¼	1½	700	2¼	1½	..	Lion Oil & Refining	(sh)	250,000	N.P.	....	10-27-30	38⅞	18	29	4⅞	6¾	1½
9¼	3⅜	24,600	5⅜	3⅜	4⅝	Lone Star Gas	(sh)	5,000,000	N.P.	15eQ	3-31-32	67⅞	28	55⅞	19⅝	25	5½
⅛	1/16	7,300	1/16	1/16	1/16	Magdalena Syndicate	(sh)	850,000	$1	....	.....	1¼	½	½	⅛	½	¼
6¼	3¾	No sales	..	..	..	Margay Oil Corp.		160,000	N.P.	25cQ	4-11-32	38½	14	16	3	5	1⅞
5¼	3½	1,800	4⅜	3½	..	Memphis Natural Gas	(sh)	920,000	N.P.	15eQ	4-15-32	24	8⅛	22¼	7½	12⅛	4½
2	2	500	2	2	2	Mexico-Ohio Oil Co.		500,000	N.P.	....	.....	6⅜	2¼	7½	1¾	4⅞	1½
⅛	⅛	No sales	..	..	..	Mountain & Gulf		$4,000,000	$1	....	4-15-31	1½	½	¾	⅜	½	⅛
3	2¼	2,500	2½	2¼	..	Mountain Producers		$1,682,182	$10	20eQ	4- 1-32	22⅞	7	12⅛	3¾	5⅞	2
13½	10	2,800	12½	10	10¼	National Fuel Gas	(sh)	3,810,183	N.P.	25eQ	4-15-32	43⅞	23	41⅜	19⅝	26½	9¾
¾	⅜	No sales	..	..	..	New Bradford Oil		$1,095,291	$5	....	4-15-31	5	2½	3½	1⅛	1½	½
⅞	½	400	¾	¾	..	New Mexico and Arizona		$1,000,000	$1	....	.....	9⅜	2¼	7¼	1½	3	¾
1	⅝	No sales	..	..	..	North Central Texas	(sh)	400,000	N.P.	....	9- 2-30	18½	6⅛	11¼	2½	3¼	⅝
⅜	¼	400	1/16	¼	¼	North European Oil	(sh)	1,372,391	N.P.	....	.....	..	..	6¼	⅝	2⅛	¼
6¼	4	2,200	4	4	..	Pacific Western Oil	(sh)	1,000,000	N.P.	....	.....	26⅝	12⅛	19½	5½	15	2⅞
⅛	1/16	No sales	..	..	..	Pandem	(sh)	489,875	N.P.	....	.....	3½	½	2½	¼	½	1/16
½	¼	100	⅜	⅜	..	Pantapec Oil	(sh)	1,506,000	N.P.	....	.....	10½	1⅞	4⅜	⅞	2	⅜
7½	6⅛	400	6½	6⅛	..	Plymouth Oil	(sh)	1,050,000	$5	25eQ	4- 1-32	37	22	27½	16¼	19	6
½	⅜	1,100	⅜	⅜	..	Reiter-Foster	(sh)	388,584	N.P.	....	12- 2-29	8½	1⅛	5⅝	1	3⅛	¼
1	⅜	100	⅜	⅜	..	Richfield Oil pfd. x.w.	(sh)	399,950	$25	....	.....	31½	22	23½	6½	11	¼
1	¾	100	¾	¾	..	Ryan Consolidated	(sh)	500,000	N.P.	....	.....	11	2	8⅝	2	3	¾
½	⅛	100	½	½	..	Salt Creek Consolidated	(sh)	1,286,300	$10	....	4- 1-31	5⅞	1⅞	2½	½	1⅝	⅛
4⅛	3⅛	1,600	3¾	3¼	3⅜	Salt Creek Producers	(sh)	1,496,859	$10	25c	5- 2-32	25⅞	9	15¼	5¼	7¾	2¾
½	¼	3,400	⅛	⅛	..	Sunray Oil	(sh)	1,163,185	$5	....	4-15-31	12	5⅝	10	2	5¼	¼
6⅝	5	1,300	5⅝	5	4¾	Texon Oil & Land	(sh)	936,036	N.P.	25c	3-31-32	23	7⅛	19½	8	12⅞	2½
½	¼	500	⅛	¼	¼	Venezuelan Petroleum	(sh)	755,000	$5	....	2-15-30	6½	1¾	4½	⅜	1⅞	¼
2	1⅛	300	1½	1¼	..	Woodley Petroleum		$500,000	$1	....	3-31-29	9½	2	5	½	3½	1⅛
½	⅛	400	¼	¼	..	Y Oil & Gas		100,000	N.P.	....	.....	2⅞	½	2½	⅜	2¼	¼

*Ex-dividend. †Unit of trading less than 100 shares. ‡Payable monthly and monthly stock dividend of one-half per cent. §Paid in lieu of regular cash dividend of 2 per cent.

forma balance sheet as of May 31, 1931.

The 14,218,835 shares of no-par common capital stock, representing a full exchange for shares of the constituent companies, are carried in the January 31, 1932, balance sheet at $5 a share, or a total of $71,094,175. Capital surplus is shown at $173,892,763 and earned surplus at $15,997,764. The total book value is shown to be $261,074,702, equal to $18 a share on the common stock. Reserves of $22,006,462 have been set up for crude oil, property abandonment, insurance, annuities, etc.

The report revealed that 11,600 shares of the 8 per cent preferred stock listed as outstanding are held in the treasury, thereby reducing the actual outstanding amount to 129,694 shares. Between May 31, 1931, and January 31, this year, funded debt was reduced $3,676,359 to a total on the latter date of $64,231,472.

The committee on securities of the New York Stock Exchange has ruled that transactions in Sinclair Consolidated Oil Corp. preferred and common stock, and in the common stock of Prairie Oil & Gas Co. and Prairie Pipe Line Co., may be settled respectively either by delivery of certificates bearing the name of the company or the equivalent in certificates of Consolidated Oil Corp.

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending April 9)

1932 High	1932 Low	Week ended April 9 Sales	Week ended April 9 High	Week ended April 9 Low	Close Apr. 13	Stocks—		Outstanding capital	Par value	Div. rate	Payable or last paid	1929 High	1929 Low	1930 High	1930 Low	1931 High	1931 Low
..	..	No sales	..	..	..	Atlantic Lobos		499,448	N.P.	....	5-28-30	..	..	1	¼	1	⅛
6¼	6	200	6	6	6	Borne Scrymser		$1,000,000	$25	....	10-15-30	46½	25	25	11¼	16	6
35	26	100	26	26	..	Buckeye Pipe Line		$10,000,000	$50	$1Q	6-15-32	74½	55	69	39⅞	56	30
90	75	100	79	79	..	Chesebrough Mfg.		$3,000,000	$25	$1Q‡	3-31-32	210	130	184⅞	104¼	129½	75
2⅜	1¾	12,500	2⅛	2	2	Creole Petroleum	(sh)	5,977,872	N.P.	....	.....	11¾	5⅜	7⅞	3	3⅞	1⅝
35	23	50	28½	28½	..	Eureka Pipe Line		$5,000,000	$100	$1Q	5- 2-32	70½	40	54¾	26	36	19
49	39¼	1,500	45	43½	39¼	Humble Oil & Refining		$74,103,300	$25	50cQ	4- 1-32	128	74⅛	119	57¼	72	44¼
9½	7	5,200	8	7½	7⅛	Imperial Oil of Canada	(sh)	25,421,768	N.P.	12½cQ	3- 1-32	41	22	30	15	18¼	7⅝
7½	3	800	3⅝	3	3	Indiana Pipe Line (new)		$3,000,000	$10	25cQ	2-15-32	41⅞	26	41	14½	21⅛	5½
10½	8½	27,200	9⅝	8½	8½	International Petroleum (new)	(sh)	14,247,088	N.P.	25cQ	3-15-32	30⅜	15	24	11⅜	15½	7⅜
10½	6⅞	400	8⅝	8	..	National Transit		$6,362,500	$12.50	25cQ	4-15-32	25⅛	10⅛	22⅜	11½	17½	5
4	3	500	3½	3¼	..	New York Transit		$500,000	$5	10cQ	4-15-32	17½	10	21⅜	10⅛	14½	5⅞
4¾	3¾	400	3¾	3¾	..	Northern Pipe Line		$1,200,000	$10	$1.50SA	1- 2-32	63	41	54	26¼	35½	20
6⅜	4	100	5	5	4	Penn Mex Fuel		$10,000,000	$25	50c	10-31-31	44½	20	32	12	15½	5½
14½	9⅝	5,300	12¼	11⅛	11½	South Penn Oil		$30,000,000	$25	25cQ	3-31-32	60¼	35⅛	45⅞	16⅛	23⅞	9¼
10	8	No sales	..	..	..	Southern Pipe Line		$1,000,000	$10	50cQ	3- 1-32	22½	13	20⅞	8⅜	17	7
37	32	50	33	33	..	Southwest Pennsylvania Pipe Line		$1,750,000	$50	$1Q	4- 1-32	70	60	64	32	42½	25
17¼	13⅛	32,800	14½	13⅛	13⅞	Standard Oil of Indiana		$422,795,250	$25	25cQ	3-15-32	63	45	59⅞	30	38½	13½
15⅞	10	15,600	12½	10	11⅜	Standard Oil of Kentucky		$25,654,516	$10	40cQ	3-31-32	46⅞	29	40½	18⅝	23⅜	12⅛
19	14½	200	14¾	14½	..	Standard Oil of Nebraska		$4,649,225	$25	50cQ	3-21-32	50¼	40	48⅞	34⅝	36½	16
28⅛	20¼	1,000	24⅝	20¼	..	Standard Oil of Ohio		$14,000,000	$25	62½cQ	4- 1-32	129	60	108½	43¼	62½	23
..	..	No sales	..	..	..	Swan-Finch Co.	(sh)	34,480	$25	....	1-15-29	18	10	10	4	4½	1

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus 50 cents extra.

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of the New York Stock Exchange and Associate Members of New York Curb, Kennedy Building, Tulsa, Okla.

(Complete record week ending April 9)

1932 High	1932 Low	Week ended April 9 Sales	Week ended April 9 High	Week ended April 9 Low	Close Apr. 13	Stocks—		Outstanding capital	Par value	Div. rate	Payable or last paid	1929 High	1929 Low	1930 High	1930 Low	1931 High	1931 Low
14¾	12	7,100	13	12	12⅞	Amerada Corp.	(sh)	922,075	P.N.	50cQ	1-30-32	42⅝	17½	31½	16½	23	11¼
4	½	600	⅞	¾	..	American Republics Corp.	(sh)	209.180	N.P.	....	12-31-30	64¾	12½	37	5⅛	12⅜	1¼
9¾	7¼	No sales	..	..	..	Associated Oil		$57,260,300	$25	25cQ	4-15-32	47¼	34½	51	30	31	8¾
12⅞	8⅝	14,100	10⅝	9	9	Atlantic Refining		$67,416,050	$25	25cQ	3-15-32	77⅞	30	51⅜	16⅝	23⅝	8⅝
5⅞	4	15,200	4¼	4	4	Barnsdall Corp. A		$11,293,895	$5	....	5-11-31	49⅛	20	34	8⅝	14½	4
16⅛	6½	103,200	11	6½	8	Columbia Gas & El.	(sh)	11,684,220	N.P.	37½cQ	2-15-32	140	52	87	30⅝	45⅝	11⅝
10½	9	3,900	10½	9½	10⅛	Colonial Beacon Oil	(sh)	1,444,970	N.P.	....	12-22-22	32⅞	12½	20⅜	8¾	10½	7½
7⅛	4¼	50,600	5⅞	4½	4⅜	Consolidated Oil Corp.	(sh)	14,190,000	N.P.	....	.....	..	..	..	..	..	..
7	5	28,700	6	5¼	5	Continental Oil of Delaware	(sh)	4,741,554	N.P.	....	12-15-27	47⅞	18	30½	7¾	12	5
35¾	17	16,300	26¾	17½	17	General American Tank Car	(sh)	811,647	N.P.	$1Q	1- 1-32	123¾	75	111⅞	53⅛	73⅛	28
15½	7⅜	7,900	10	7⅜	..	General Asphalt	(sh)	413,333	N.P.	25cQ	3-15-32	94¾	42¼	71½	22⅜	47	9⅝
24⅜	12¾	5,700	18¼	13½	12¾	Houston Oil		$24,968,600	$100	....	10-17-30	109	26	116⅞	29¼	68½	15¾
1⅝	1	1,400	1¼	1	..	Indian Refining		$12,564,070	$10	....	10- 1-30	53	13⅛	17	2	4⅝	1⅛
1⅝	1	1,000	1⅛	1	..	Louisiana Oil Refining	(sh)	1,190,063	N.P.	....	.....	18	7	12	3½	4½	1
1	½	500	⅝	½	..	Maracaibo Oil	(sh)	330,000	N.P.	....	.....	18½	5⅛	10⅜	1⅜	3¾	½
6½	3¾	12,300	5	3¾	4¾	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	....	2-16-31	39⅞	22⅛	32	11	16¾	5
9¼	5½	1,200	6½	5½	..	National Supply of Delaware	(sh)	390,879	$50	....	5-15-31	144	98½	124¾	60	70¼	5
7⅞	5	22,000	7¼	5¾	5⅝	Ohio Oil	(sh)	6,648,052	N.P.	....	3-14-31	79⅞	64¼	32	16	19½	5⅛
17⅛	17⅛	No sales	..	..	..	Pan American P. & T.		$50,084,700	$50	40c	4-20-32	69	40½	46½	42	35⅛	20
23	16	1,600	23	20⅛	22½	Pan American P. & T. "B"		$121,110,650	$50	40c	4-20-32	69¼	40½	67¼	30	36½	18
1¼	½	200	⅞	¾	..	Panhandle P. & R.	(sh)	199,370	N.P.	....	.....	15¼	3	12¾	1¾	4¼	⅝
6½	3⅞	19,700	5½	4¼	3⅞	Phillips Petroleum	(sh)	2,593,075	N.P.	....	1- 2-31	47	24¼	44⅝	11½	16⅝	4
½	¼	100	⅜	⅜	..	Pierce Oil Corp.		$29,622,831	$25	....	.....	3⅜	1	2½	½	1½	¼
1⅛	⅝	2,200	⅞	¾	..	Pierce Petroleum	(sh)	2,500,000	N.P.	....	2-16-31	5⅞	½	7⅛	1⅛	3⅜	½
7⅛	4¼	800	5⅝	4⅞	4¼	Prairie Oil & Gas		$60,848,000	$25	....	3-31-31	65⅜	40½	54	11¼	20⅜	4⅛
9⅜	5⅜	4,900	8	6¼	5⅞	Prairie Pipe Line		$101,250,000	$25	....	6-30-31	65	45	60	16⅝	26½	5⅞
1⅝	⅞	1,400	1	⅞	..	Producers & Refiners		$37,438,950	$50	....	9-15-23	25⅞	4	11⅞	1	6	1
9¾	3½	20	8	8	..	Producers & Refiners pfd.		$2,845,350	$50	....	5- 4-25	46¾	25½	40	11½	16	3
5⅛	3¼	13,100	4⅛	3⅜	3½	Pure Oil		$75,959,250	$25	....	9- 1-30	30¾	20	27¼	7⅝	11⅞	3¼
¾	½	1,700	⅝	½	½	Richfield Oil (new)		$52,410,875	N.P.	....	.....	49⅝	20	9¾	4⅛	6¾	⅜
2½	2	3,900	2½	2⅛	2⅛	Rio Grande Oil	(sh)	1,236,270	N.P.	....	7-25-30	42½	15	25¾	5	10¼	1¼
23	13⅜	10,100	17½	15⅝	16¼	Royal Dutch N. Y.	(sh)	611,303	....	$0.9385	8- 4-31	64	43⅛	56½	36⅞	42⅝	13
9⅞	6⅝	19,000	8¼	7⅝	6¾	Seaboard Oil of Delaware	(sh)	1,244,383	N.P.	....	10- 1-24	59⅜	8¼	37	9¾	20¾	5½
15¾	8½	No sales	..	..	..	Shell Transport & Trading Co.		£23,985,000	£1	$0.726	7-23-31	51½	40⅝	48⅜	26	34	5
4⅛	2⅝	10,600	3¼	2⅝	2¾	Shell Union Oil	(sh)	13,066,497	N.P.	....	6-30-30	31¾	19	25½	5¼	10¼	2½
31	19	1,100	21½	19½	23½	Shell Union Oil pfd.	(sh)	400,000	$100	....	7- 1-31	108¼	93	106¼	55	78	15
6	3¼	7,100	4½	3¼	4	Simms Petroleum	(sh)	600,000	$20	....	9-15-30	40⅛	15	37	5⅝	11	3½
4½	2½	1,500	3¾	3¼	...	Skelly Oil		$27,441,250	$25	....	12-15-30	40½	28	12	10⅛	12⅞	2
19	12	6,000	17⅝	16	16	Skelly Oil pfd.	(sh)	119,800	$100	....	5- 1-31	..	..	99¾	42	62	10
10⅜	8⅜	75,800	9½	8⅝	8½	Socony-Vacuum	(sh)	31,923,072	$25	25c	3-15-32	..	..	106⅝	98	106	87½
91½	84½	500	87½	86	84½	Standard Oil Export pfd.	(sh)	764,885	$100	$2.50SA.	12-31-31	..	..	..	..	21	8⅜
27¼	17¾	38,900	24¼	20⅝	17½	Standard of California	(sh)	12,594,098	N.P.	50cQ	3-15-32	81⅞	51½	75	42½	51¾	23⅛
12⅜	7	1,400	7½	7	..	Standard of Kansas		$8,000,000	$25	....	3-16-31	33¾	18	49	14⅜	19	7¾
31½	21⅞	95,700	27⅞	25¾	21⅞	Standard Oil of New Jersey		$634,999,200	$25	25cQ‡	3-15-32	83	49	84⅞	32½	52½	26
32	25⅞	1,300	28½	28	25⅞	Sun Oil	(sh)	1,416,869	N.P.	25cQ	3-15-32	68⅜	55	70	39	45¼	26¾
⅝	4	700	½	¼	..	Superior Oil Corp.	(sh)	766,979	N.P.	....	12-20-30	24	5¼	9⅜	¾	1¾	¼
13⅞	10	43,200	11⅞	10⅜	10⅜	The Texas Corporation		$246,204,900	$25	25cQ	4- 1-32	71⅞	50	60½	28¼	36¼	9⅞
2⅜	1½	2,400	2	1¾	1½	Texas Pacific Coal & Oil Co.		$9,304,890	$10	....	12-31-29	23⅞	9½	14½	4	6½	1⅞
9	7	No sales	..	..	..	Tide Water Oil	(sh)	2,191,759	N.P.	25cQ	3-31-32	40	14	31	13	18	9⅞
41	30	No sales	..	..	..	Tide Water Oil pfd.	(sh)	19,947,000	N.P.	$1.25Q	2-15-32	97½	85⅛	94⅞	71	83	30
3½	2	21,700	2¼	2	2⅛	Tide Water Associated	(sh)	5,560,424	N.P.	....	2-16-31	23½	10	17¾	5⅞	9	2⅛
28⅛	20	700	23	22½	..	Tide Water Associated pfd.		$73,284,500	....	$1.50Q	1- 2-32	90⅞	74⅛	89¾	55	68	20½
13⅞	10½	5,000	11⅞	10⅞	10½	Union Oil of California		$104,342,375	$25	35cQ	2-10-32	57	42⅛	50	10⅛	26⅝	11
19¼	13	3,500	15	13½	13	Union Tank Car	(sh)	1,254,048	$100	40cQ	3- 1-32	163¾	121⅞	138½	23	25⅛	16
1½	1	200	1¼	1	..	Warner-Quinlan	(sh)	632,948	N.P.	....	7- 1-30	42⅞	15	27	4¼	7⅝	⅞
5¾	3¼	1,800	4½	3¾	3½	Wilcox Oil & Gas	(sh)	428,907	$5	....	5-10-28	29¾	12⅞	21	6½	9⅜	2¾

*Ex-dividend. †Unit of trading less than 100 shares. ‡Plus extra dividend of 25 cents.

In comparing highs and lows for the several years in the three tables, it will be necessary to take into consideration cases where there have been stock split-ups.

Summary of Operations in All Fields for March, 1932

SUMMARY OF ALL FIELDS
WELLS COMPLETED

	Comp.	Prod.	Dry	Gas
Eastern	113	453	21	17
Central Ohio	39	155	17	13
Lima	10	110	2	4
Indiana	10	240	7	1
Michigan	8	4,015	4	0
Kentucky	41	838	7	12
Illinois	3	15	1	1
Kansas	30	7,522	6	2
Oklahoma	79	38,125	26	12
North Central Texas	57	984	29	8
E. Cent. & E. Tex.	406	29,072	25	1
East Texas gas area	3	....	2	1
West Texas	13	1,377	6	0
Panhandle Texas	7	570	1	3
Gulf Coast	43	12,407	18	0
Southwest Texas	61	2,858	31	4
North Louisiana	23	570	13	5
Arkansas	1	35	0	0
Mississippi	7	....	0	7
Wyoming	2	910	0	0
Colorado	2	27	1	0
New Mexico	4	25,206	0	0
Total March	962	125,539	217	91
Total February	885	174,303	222	99
Difference	77	48,764	5	8

RIGS AND WELLS DRILLING

	Rigs	Drlg.	Ttl.
Eastern	57	115	172
Central Ohio	21	64	85
Lima	3	15	18
Indiana	2	60	62
Michigan	50	79	129
Kentucky	9	62	71
Missouri	0	1	1
Tennessee	0	14	14
Illinois	1	20	21
Kansas	42	112	154
Oklahoma	65	248	313
North Central Texas	47	128	175
E. Cent. and E. Tex.	277	280	557
East Texas gas field	7	32	39
West Texas	26	79	105
Panhandle Texas	12	39	51
Gulf Coast	11	99	110
Southwest Texas	25	106	131
North Louisiana	34	41	75
Arkansas	8	30	38
Mississippi	7	11	18
Alabama	2	3	5
Montana	13	51	64
Wyoming	10	62	72
Colorado	10	70	80
New Mexico	8	43	51
Utah	1	19	20
Total March	748	1,883	2,631
Total February	681	1,944	2,625
Difference	67	61	6

Note—In the following report the Section, Township and Range are given first; then the farm, the owner, the serial number of the well and the initial production of the well. In lines where the Section, Township and Range are missing the wells are located in the Sections, Townships and Ranges which appear next above in the report.

OKLAHOMA FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Carter	3	1,426	1	0
Coal	1	0	0	1
Creek	14	628	4	3
Haskell	1	0	0	1
Hughes	1	650	0	0
Kay	2	335	1	0
Love	1	0	1	0
Marshall	5	27	3	1
Muskogee	5	40	3	0
Okfuskee	2	0	1	1
Oklahoma	9	28,287	1	0
Okmulgee	5	52	2	1
Osage	5	70	2	0
Pawnee	1	0	1	0
Payne	1	0	1	0
Pontotoc	2	58	0	0
Pottawatomie	1	732	0	0
Seminole	6	5,480	0	0
Stephens	7	275	1	3
Wagoner	3	65	0	1
Tulsa	4	0	4	0
Total March	79	38,125	26	12
Total February	63	76,654	17	16
Difference	16	38,529	9	4

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Ttl.
Alfalfa	0	2	2
Atoka	0	1	1
Beckham	1	5	6
Blaine	0	1	1
Caddo	0	4	4
Canadian	0	1	1
Carter	1	1	2
Coal	0	2	2
Cherokee	0	1	1
Cleveland	1	0	1
Comanche	0	2	2
Cotton	1	0	1
Creek	9	34	43
Garfield	2	2	4
Garvin	0	1	1
Greer	0	1	1
Grady	2	0	2
Grant	1	2	3
Hughes	1	4	5
Haskell	0	2	2
Jefferson	1	1	2
Kay	0	6	6
Kiowa	0	1	1
Latimer	0	2	2
Lincoln	0	5	5
Logan	0	4	4
McIntosh	0	1	1
Marshall	0	5	5
Muskogee	1	14	15
Noble	1	9	10
Okfuskee	0	8	8
Oklahoma	15	47	62
Okmulgee	6	9	15
Osage	5	7	12
Pawnee	0	10	10
Pittsburg	0	3	3
Pontotoc	5	7	12
Pottawatomie	2	5	7
Roger Mills	0	2	2
Seminole	2	12	14
Stephens	4	7	11
Tillman	0	1	1
Tulsa	1	8	9
Washita	1	2	3
Wagoner	2	6	8
Total March	65	248	313
Total February	57	243	300
Difference	8	5	13

WELLS COMPLETED

CARTER COUNTY

31-1s-2w Lynn, Carter Oil Co. 1 176
18-1s-2w Hooks, H. L. Sturm and W. Gant 1 1250
8-1s-2w Spragins, Frank Lundy et al 1 dry

Wells completed 3
Production 1426
Dry 1

COAL COUNTY

25- 3- 9 Hall, Mid-Western O. & G. 1.. gas

Wells completed 1
Gas 1
Gas production 2,000,000

CREEK COUNTY

21-19- 9 D. Bible, Gled Oil Co. 2 ..... dry
4-17-11 Harry, Krasne Drlg. Co. 2-A ... dry
28-17-11 Reed, McCurry et al 1-A ..... dry
32-17-11 Robinson, J. A. Allen et al 1 .. gas
24-14-10 Cooper, Atlantic Oil Prod. Co. et al 1 156
13-19- 8 Strip, Kirchner et al 2 40
8-19- 9 Thomas, Gled Oil Co. 1-A ..... dry
19-19- 9 Lashley, Roy Dean et al 1 .. . 15
29-19- 9 Hamilton, Gled Oil Co. 3 200
1-18- 8 Nave, Bert Swift et al 1-A 35
13-17-11 McIntosh, H. E. Dowd et al 1-A gas
3-16- 7 Bruner, Magnolia Pet. Co. 10.. gas
25-19- 9 S. Deere, Holmes Oil Co. 1 ... 12
22-15- 8 Bissett, F. R. Billingslea 2 ... 170

Wells completed 14
Production 628
Dry 4
Gas 3
Gas production 3,275,000

HASKELL COUNTY

33-8-19 Rabon, Midwestern O. & G. Co. 1 gas

Wells completed 1
Gas 1
Gas production 50,000

HUGHES COUNTY

9- 7- 8 L. Tiger, Mid-Continent Pet. Corp. 1 650

Wells completed 1
Production 650

KAY COUNTY

18-29-1e Cole, Harris & Haun 1 335
24-28- 3 Haynes, W. H. Atkinson & Eason Oil Co. 1 ..... dry

Wells completed 2
Production 335
Dry 1

LOVE COUNTY

1-6s-1e Bourland, J. B. Schermerhorn et al 1 ..... dry

Wells completed 1
Dry 1

MARSHALL COUNTY

22- 5-6 Walker, Edna Marie Oil Co. 1.. gas
30-5s-6 Marshall, M. A. Neff et al 2 ... 27
33-6s-7 Franklin, C. Dillingham and M. A. Neff 1 ..... dry
24-7s-5 Williams, E. L. Harreld & Hauson 1 ..... dry
8-8s-6 Byrd, F. H. E. Oil Co. 1 ..... dry

Wells completed 5
Production 27
Dry 3
Gas 1
Gas production 2,000,000

MUSKOGEE COUNTY

33-16-15 McDaniel, Aggas Drlg. Co. 1.. dry
33-16-15 D. Richards, Mack Drlg. Co. 7 25
15-15-17 Morrison, B. W. Christian et al 1 ..... dry
15-14-16 Morrison, Armstrong et al 9 .. 15
20-16-15 Taylor, E. W. Ladd 1-A ..... dry

Wells completed 5
Production 40
Dry 3

OKFUSKEE COUNTY

32-12-10 Grayson, Burke Greis Oil Co. 1 gas
8-12- 7 Rogers, Oklahoma Crude Oil 1 dry

Wells completed 2
Dry 1
Gas 1
Gas production 12,500,000

OKLAHOMA COUNTY

15-11-3w Massey, California Operating Co. 1 ..... dry
2-11-3w Garrett Rucker, Gulf Prod. & Ref. Co. 1 (5 hrs.) 2182
10-11-3w Buchanon, Refiners Prod. Co. 1 (4 hrs.) 2803
15-11-3w Smith, Ocate Oil Co. 1 (4 hrs.) 4792
22-11-3w Ledbetter, Skelly Oil Co. 1 (4 hrs.) 580
22-11-3w Fish, Harrell-Davis et al 1 (4½ hrs.) 1550
15-11-3w Volk, Continental Oil Co. and Anderson & Kerr 1 (4 hrs.) .8510
22-11-3w Cowell, Phillips Pet. Co., Wellesley et al 1 (4 hrs.) 2783
Dodd, T. B. Slick Estate 1 (4 hrs.) 5087

Wells completed 9
Production 28,287
Dry 1

OKMULGEE COUNTY

21-16-11 Hughes, S. J. Mathews et al 2 gas
28-13-11 Jones, J. H. Rebold 1-A 12
23-14-14 Thomas, M. H. Castleman 5 ... 40
24-13-14 Aultman, Iron Mountain Oil Co. 12 ..... dry
32-12-12 Tunnely, Le Beene Drlg. Co. 3 dry

Wells completed 5
Production 52
Dry 2
Gas 1
Gas production 1,000,000

OSAGE COUNTY

26-21-10 J. E. Cooper et al 2 ..... dry
34-29-10 S. A. Murphy 154 ..... dry
16-23-11 Corbin & Haver 7 15
21-23-11 McCoy et al 3 5
32-22- 8 W. H. Twyman et al 3 50

Wells completed 5
Production 70
Dry 2

PAWNEE COUNTY

24-20-7 Lederer, Spartan Drlg. Co. 3 .. dry

Wells completed 1
Dry 1

PAYNE COUNTY

10-18-5 Smith, Willis O. & G. Co. 1-A.. dry

Wells completed 1
Dry 1

PONTOTOC COUNTY

6-3-7 Lloyd, Ada Dev. Co. 6 20
29-5-8 Harrell, Gus Dalaney 2 38

Wells completed 2
Production 58

POTTAWATOMIE COUNTY

23-6-3 Horn, Gypsy Oil Co. 5 732

Wells completed 1
Production 732

SEMINOLE COUNTY

3-8-5 L. Tiger, Gypsy Oil Co. 2 79
J. Tiger, Amerada Pet. Corp. 5.. 559
2-8-5 Coker, Gypsy Oil Co. 7 127
3-8-5 Brown, Prairie O. & G. Co. and T. B. Slick Estate 1 170
1-8-6 Maxey, Prairie O. & G. Co. 1 900
30-7-8 Fish, Jarvis, & Holm 2 3645

Wells completed 6
Production 5480

STEPHENS COUNTY

2-2s-8w Green, L. P. Gilbert 1 115
12-2s-8w Fobb "B", Murphy Oil Co. 4 .. dry
2-2s-8w Dare, J. C. Chambers et al 1.. 10
3-2s-8w Allen, George Pace et al 3 ... gas
11-3s-6w Dameron, Dameron-Branch 1. gas
11-2s-8w Dunmar, Dun-Mar Oil Co. 1 .. gas
2-2s-8w Dare, J. C. Chambers et al 2 (14½ hrs.) 150

Wells completed 7
Production 275
Dry 1
Gas 3
Gas production 11,740,000

WAGONER COUNTY

23-18-15 T. Robin, Sands Pet. Co. 1 .... gas
30-17-17 J. Wilson, W. J. Metzger 6 . 5
26-18-15 M. Drew, J. E. Martin 1 .. . 60

Wells completed 3
Production 65
Gas 1
Gas production 3,000,000

TULSA COUNTY

1-18-12 Edwards, West Pet. Co. 10 ... dry
13-18-14 Barnett, Chastain Oil Co. 1.... dry
28-18-14 Flippen, Dunn et al 1 ..... dry
19-16-14 Tiger, Norfolk Oil Co. 1 ..... dry

Wells completed 4
Dry 4

KANSAS FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Barber	1	0	1	0
Barton	1	60	0	0
Chase	1	0	0	1
Coffey	2	50	1	0
Cowley	4	267	1	1
Ellis	1	50	0	0
Greenwood	2	226	1	0
Harvey	1	50	0	0
Marion	1	0	1	0
McPherson	9	4,909	1	0
Morris	1	85	0	0
Sedgwick	6	1,815	0	0
Total March	30	7,522	6	2
Total February	37	17,004	15	0
Difference	7	9,482	9	2

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Ttl.
Barton	0	1	1
Bourbon	0	1	1
Butler	2	1	3
Chase	1	1	2
Clark	0	1	1
Cowley	2	12	14
Dickinson	0	1	1
Douglass	1	0	1
Edwards	1	0	1
Ellsworth	6	9	15
Finney	0	1	1
Ford	0	2	2
Greenwood	4	14	18
Graham	0	1	1
Harvey	3	1	4
Kingman	1	1	2
McPherson	10	30	40
Marion	0	1	1
Morris	1	4	5
Morton	0	1	1
Osage	0	1	1
Phillips	1	0	1
Pratt	1	0	1
Rawlins	0	1	1
Reno	4	1	5
Rice	1	3	4
Rush	0	2	2
Russell	2	2	4
Saline	0	1	1
Sedgwick	1	7	8
Sheridan	0	1	1
Stafford	0	2	2
Stevens	0	1	1
Sumner	0	3	3
Trego	0	1	1
Washington	0	1	1
Woodson	0	2	2
Total March	42	112	154
Total February	34	113	147
Difference	8	1	7

WELLS COMPLETED

BARBER COUNTY

11-33-13w Carter, Barbara Oil Co. 4.... dry

Wells completed 1
Dry 1

BARTON COUNTY

12-20-11w Berscheidt, Derby Oil Co. 1.. 60

Wells completed 1
Production 60

CHASE COUNTY

27-19-6 Stevenson, K.R.&T. Gas Co. 1.. gas

Wells completed 1
Gas 1
Gas production 500,000

COFFEY COUNTY

14-22-13 Strickland, Aikman & Young 1 60
30-22-14 Krast, Hegberg et al 1 ..... dry

Wells completed 2
Production 60
Dry 1

COWLEY COUNTY

29-31-6 Sitton, Dan Patton et al 1 150
22-32-4 Mattison, Knox Drilling Co. and Eason Oil Co. 1 117
Hutto, McKnabb et al 1 ..... gas
19-34-3 Cassoday, Whitter et al 1 ..... dry

Wells completed 4
Production 267
Dry 1
Gas 1
Gas production 500,000

ELLIS COUNTY

25-12-16w Furthmeyer, Mid-West Refining Co. 36 50

Wells completed 1
Production 50

GREENWOOD COUNTY

33-23-11 Carson, Harwood Oil Co. 1 ... 226
10-24- 8 Burk, McGinnis et al 1 ..... dry

Wells completed 2
Production 226
Dry 1

HARVEY COUNTY

35-22-2w Lehman, Imo Oil & Gas Co. 1 150

Wells completed 1
Production 150

MARION COUNTY

16-17-4 Bemhardt, Bednour et al 1 .... dry

Wells completed 1
Dry 1

McPHERSON COUNTY

36-19-2w Koehn, Olsen and Shell Pet. Corp. 5 ..... gas
36-19-2w Becker, Syndicate Oil Co. and Shell Pet. Corp. 3 1086
Becker, Syndicate Oil Co. and Shell Pet. Corp. 4 1352
24-19-2w Law, Lario Oil Co. and Shell Pet. Corp. 1 844
6-20-1w Domsch, Derby Oil Co. and Empire O. & R. Co. 8 602
16-20-1w Farver, Twin Drlg. Co. et al 1 dry
21-21-3w Wall, Western Gasoline Corp. and Shell Pet. Corp. 1 125
26-19-2w Williams, Dickey Oil Co. 2 ... 500
35-19-3w Johnson, Shell Pet. Corp. 1 ... 400

Wells completed 9
Production 4909
Dry 1

MORRIS COUNTY

22-16-7 Lowery, Loomis et al 1 85

Wells completed 1
Production 85

SEDGWICK COUNTY

16-25-1e Smith, Continental Oil Co. 1 .. 420
19-27-2 Eastborough, Derby Oil Co. 1.. 350
19-27-2 Wheeler, Magnolia Pet. Co. 7. 300
15-25-1e Brown, Continental Oil Co. 1... 80
16-25-1e Goodrich, Continental Oil Co. 1 490
18-27-2 Murdock, National Ref. Co. 4.. 175

Wells completed 6
Production 1815

EAST TEXAS FIELDS

Summary of Field Operations

County—	Comp.	Prod.	Abd.	Gas	Rigs	Drg.	Ttl.
Anderson	0	0	0	0	0	1	1
Angelina	0	0	0	0	1	0	1
Bowie	3	0	3	0	1	1	2
Camp	1	0	1	0	0	0	0
Cherokee	0	0	0	0	3	5	8
Dallas	0	0	0	0	1	2	3
Delta	1	0	1	0	2	0	2
Ellis	0	0	0	0	0	3	3
Franklin	0	0	0	0	0	1	1
Gregg	222	16,734	2	0	171	117	288
Henderson	1	0	1	0	0	0	0
Hill	0	0	0	0	0	1	1
Hopkins	0	0	0	0	0	2	2
Hunt	0	0	0	0	0	1	1
Kaufman	0	0	0	0	0	1	1
Lamar	1	0	1	0	0	3	3
Leon	0	0	0	0	1	1	2
Nacogdoches	0	0	0	0	1	3	4
Polk	0	0	0	0	1	3	4
Rains	1	0	1	0	0	1	1
Red River	4	0	4	0	0	2	2
Robertson	0	0	0	0	0	2	2
Rusk	117	8,463	3	0	62	79	141
Sabine	0	0	0	0	0	1	1
San Augustine	0	0	0	0	0	1	1
Smith	16	1,238	1	0	14	20	34
Titus	0	0	0	0	0	1	1
Upshur	25	1,445	1	0	15	16	31
Van Zandt	13	1,192	1	1	3	11	14
Wood	1	0	1	0	0	1	2
Total Mar.	406	29,072	25	1	277	280	557
Total Feb.	343	29,037	14	3	249	321	570
Difference	63	35	11	2	28	41	13

Note: Initial production based on one-hour gauge through various chokes.

WELLS COMPLETED

BOWIE COUNTY

Logan & Elliott's No. 1 J. W. Smith.. abd
Lee Timberlake's No. 2 Tidwell..... abd
Langford et al's No. 1 Whybark..... abd

Wells completed 3
Abandoned wells 3

CAMP COUNTY

Monitor Oil Co.'s No. 1 G. L. Merrill.. abd

DELTA COUNTY

Commerce Oil Co.'s No. 1 Abolwich.... abd

GREGG COUNTY

Atlantic Oil & Prod. Co.'s No. 1 A. V. Bacle, through ¾-in. tubing..... 60
Atlantic Oil & Prod. Co.'s No. 2 Castleberry, through tapered tubing 60
Cranfill & Reynolds' No. 2 Anderson, through 1-in. tubing choke 96
East Texas Ref. Co.'s No. 3 R. R. Collins, through 1-in. tubing choke ... 75
Empire Gas & Fuel Oil Co.'s No. 4 L. A. Jeter, through open tubing (¼ hr.).. 58
Fain & McGaha's No. 3 Baunknight, through open tubing (½ hr.) 70
F.H.E. Oil Co.'s No. 2 J. Christian, through ¾-in. tubing choke (¼ hr.) 29
F.H.E. Oil Co.'s No. 1 J. M. Christian, through 1-in. tubing choke (½ hr.).. 75
F.H.E. Oil Co.'s No. 4 R. Christian, through open tubing (¼ hr.) 62
Gulf Prod. Co.'s No. 4 L. C. Judge, through ⅝-in. tubing choke 120
Gulf Prod. Co.'s No. 5 Judge, through 1-in. tubing choke (½ hr.) 40
Gulf Prod. Co.'s No. 4 Lacy Snider, through 1-in. tubing choke 80
Manzell et al's No. 1 C. H. Moore, through open tubing 240
Selby & Lewis' No. 3 L. C. Ingram, through open tubing (¼ hr.) 52
Selby Oil & Gas Co.'s No. 3-B Snavely, through 1-in. tubing choke 85
Shasta Oil Co.'s No. 2-B Ritchie, through ¾-in. tubing choke (¼ hr.) 25
Shell Pet. Corp.'s No. 3 H. Hampton, through tapered tubing (25 min.) ... 30
Shell Pet. Corp.'s No. 5 Richey, through tapered tubing 40
Lewis Sikes' No. 3 Stencil, through open tubing (¼ hr.) 40
Simms Oil Co.'s No. 2-A Tennery, through open tubing 158
Sinclair Oil & Gas Co.'s No. 20 Moncrief, through open tubing (¼ hr.) 75
Stanolind Oil & Gas Co. and Simms' No. 5 Person, through open tubing (½ hr.) 55
Sun Oil Co.'s No. 3 J. C. Gray, through tapered tubing 25
Sun Oil Co.'s No. 5 J. C. McKinley, through open tubing 110
Tidal Oil Co.'s No. 2 Moore, through ¾-in. tubing choke (¼ hr.) 31
Yount Lee Oil Co.'s No. 2 M. McKinley, through 1-in. tubing choke 90
Arkansas Fuel Oil Co.'s No. 1 Huey Ross, through 1-in. tubing choke (½ hr.) 43
Byrd-Frost Oil Co.'s No. 3 M. B. Hughey, through ¾-in. tubing choke 125
Doss & Jones' No. 3 Hagler, through pinched tubing, per day 75
Henry Oil Co.'s No. 2 Ben Laird, through pinched tubing, per day 75
Jones & O'Brien, through pinched tubing, per day 75
W. A. Brown's No. 1 J. Spear, through 1-in. tubing choke (20 min.) 30
Marine Oil Co.'s No. 2 L. V. Crim, through pinched tubing, per day 75
Mazda Oil Co.'s No. 2 Levi Butts, through pinched tubing, per day 75
Shell Pet. Corp.'s No. 3-B J. S. Elder, through tapered tubing (20 min.).... 21
Sinclair Oil & Gas Co.'s No. 2 J. E. Lawther, through ¾-in. tubing choke (½ hr.) 65
Sun Oil Co.'s No. 2 J. S. Elder, through open tubing 120
Tidal Oil Co.'s No. 2 C. C. Strong, through open tubing (4 min.) 315
R. A. Ambrose's No. 3 D. L. Magrill, through 1-in. tubing 60
Amerada Pet. Co.'s No. 4 Killingsworth, through 1½-in. tubing choke (½ hr.) 176
Arkansas Fuel Oil Co.'s No. 2 Calvin, through open tubing (½ hr.) 36
Arkansas Fuel Oil Co.'s No. 4 Castleberry, through open tubing (½ hr.).. 54
Arkansas Fuel Oil Co.'s No. 2 T. Snoddy, through open tubing (½ hr.) 84
Arkansas Fuel Oil Co.'s No. 4 H. Stevens, through open tubing (½ hr.)... 78
Atlantic & Pacific Oil Co.'s No. 1 Ed Harvey, through tapered tubing (¼ hr.) 16
Barnsdall and Sun Oil Co.'s No. 6 Bingham, through ¾-in. tubing choke .. 144
Columbia Oil & Gas Co.'s No. 3 McGrede, through open tubing (½ hr.) 60
Cox & Hamon's No. 6 L. A. Rodden, through open tubing 150
Devonian Oil & Gas Co.'s No. 2 L. C. Ingram, through ¾-in. tubing choke 110
Dillard Oil Co.'s No. 6 Jones, through 1-in. tubing choke (¼ hr.) 30
East Texas Ref. Co.'s No. 1 Tom Christian, through 1-in. tubing choke (45 min.) 70
East Texas Ref. Co.'s No. 3 Guy Hyman, through 1-in. tubing choke 75
Gregg Oil Co.'s No. 1-F T.&P. Ry., through open tubing (¼ hr.) 29
Harry Hamburry's No. 1 W. E. Foshee, through open tubing (10 min.) 15
Houston Oil Co.'s No. 3 E. M. Clements, through ¾-in. tubing choke 97
Humble Oil & Ref. Co.'s No. 4 J. F. Boles, through ¾-in. tubing choke.. 103
Humble Oil & Ref. Co.'s No. 6-A Delta Johnson, through ¾-in. tubing choke 96
Imperator Oil Co.'s No. 1 George Ritchie, through open tubing 150
Kewanee Oil Corp.'s No. 4 Adams, through open tubing (½ hr.) 70
W. H. Lampton et al's No. 2 Spring Hill Church, through open tubing 97
Magnolia Pet. Co.'s No. 4 H. Key, through open tubing 208
J. H. Massie et al's No. 2 J. W. Orr, through open tubing (¼ hr.) 61
Navarro Oil Co.'s No. 3 T. B. Harris, through 1-in. tubing choke 100
Phillips & Lee's No. 2 Woods, through 1-in. tubing choke (10 min.) 20
Rajo Oil Co.'s No. 1 Barrett, through open tubing 168
Seigler & McCall's No. 3 M. Young, through 1-in. tubing choke (¼ hr.) 30
Shasta Oil Co.'s No. 2-A T. D. Campbell, through 1-in. tubing choke (¼ hr.) 30
Shell Pet. Corp.'s No. 3 Akins, through tapered tubing (½ hr.) 20
Shell Pet. Corp.'s No. 3 Basshorn, through tapered tubing (½ hr.) ... 15
Shell Pet. Corp.'s No. 3-A N. King, through tapered tubing (½ hr.) ... 20
Stanolind Oil & Gas Co. et al's No. 3-C J. J. Flewellen, through open tubing 150
Stanolind Oil & Gas Co. et al's No. 3 Albright, through open tubing 136
Superior Oil Co.'s No. 5 Jones, through tapered tubing (½ hr.) 95
Tidal Oil Co.'s No. 5 J. J. Castleberry, through ¾-in. tubing choke 80
Yount Lee Oil Co.'s No. 2 I. Benson, through 11/16-in. tubing choke 75
Yount Lee Oil Co.'s No. 5 Orms, through open tubing 94
C. C. Julian and J. W. Herrold's No. 2 J. M. England, through ¾-in. tubing choke 70
Gulf Prod. Co.'s No. 14 Spear, through ⅝-in. tubing choke 82
Prairie Oil & Gas Co.'s No. 3 A. S. Lockhart, through ¾-in. tubing choke 102
Ruston Drilling Co.'s No. 2 R. Lacy, through pinched tubing, per day ... 75
J. C. Means, Jr.'s No. 2 W. P. Lucy, through open tubing (10 min.) 25
Steen Drilling Co.'s No. 4 W. D. Lucy, through ¾-in. tubing choke 120
Dr. Thompson's No. 2 King, through ⅝-in. tubing choke 150
Tidal Oil Co.'s No. 6 M. G. Barton, pinched through tubing, per day 75
Wells & Gann's No. 1 Hawkins, through tapered tubing 30
F. J. Adams, Jr.'s No. 1 Shilo Church, through 1-in. tubing choke 80
Alco Royalty Co.'s No. 2 R. P. Johnson, through 1-in. tubing choke 75
Arkansas Fuel Oil Co.'s No. 4-B McPherson, through open tubing (¼ hr.) 45
Atlantic Oil & Prod. Co.'s No. 4 Dunikin, through 1-in. tubing choke 110
Barnsdall Oil Co.'s No. 7 Adams, through 1-in. tubing choke (¼ hr.).. 34
Beard et al's No. 1 J. J. Fuller, through ¾-in. tubing choke 65
Cherokee Chief Oil Co.'s No. 2 Johnson, through open tubing (¼ hr.) 35
Columbia Oil & Gas Co.'s No. 3-A J. B. Doby, through open tubing (¾ hr.).. 75
Empire Gas & Fuel Oil Co.'s No. 2 A. Green, through open tubing (¼ hr.) 43
Ralph Fenton's No. 1 Alexander, through 1-in. tubing choke (17 min.) 28
F.H.E. Oil Co.'s No. 5 J. Flemster, through 1-in. tubing choke 75
Gulf Prod. Co.'s No. 6 L. Sneider, through ¾-in. tubing choke 130
Humble Oil & Ref. Co.'s No. 6 W. B. Hughes, through ¾-in. tubing choke 65
Jones & O'Brien's No. 3 McHeney-Loeb, through open tubing (¼ hr.) 50
Pilot Oil Co.'s No. 1 G. S. Maddox, through 1-in. tubing (½ hr.) 30
Roeser & Pendleton's No. 1-A E. Nicholson, through open tubing (43 min.) 90
Sattellite Oil Co.'s No. 4 L. M. Colburn, through 1-in. tubing choke 75
Selby & Lewis' No. 4-C Snavely heirs, through open tubing (¼ hr.) 50
Shell Pet. Corp.'s No. 6 Richey, through tapered tubing 40
J. R. Smith's No. 3 J. B. Doby, through 1-in. tubing choke (5 min.) 10
Simms and Stanolind Oil & Gas Co.'s No. 3 Tuttle, through open tubing (¼ hr.) 75
Tidal Oil Co.'s No. 6 A. F. Sheppard, through open tubing (½ hr.) 52
Arkansas Fuel Oil Co.'s No. 2 G. Donaldson, through 1-in. tubing choke (½ hr.) 25
Byrd-Frost Oil Co.'s No. 1-A J. B. Watson, through pinched tubing, per day 75
Gulf Prod. Co.'s No. 2 A. A. King, through ¾-in. tubing choke 8
Gulf Prod. Co.'s No. 1 R. H. Still, through ¾-in. tubing choke 75
John Roberg's No. 1 C. H. Blackman, through pinched tubing, per day.... 75
Bill McCulloch's No. 2 G. M. Strong, through ¾-in. tubing choke 20
Magnolia Pet. Co.'s No. 3 John Redford, through 1-in. tubing choke 100
Merren & Myas' No. 2 Dansby, pinched through tubing, per day 75
J. B. Hughes' No. 1 A. A. King, through ¾-in. tubing choke (13 min.) 40
Producers Investment Corp.'s No. 3 J. A. Butts, through 1-in. tubing choke.... 80
Shell Pet. Corp.'s No. 11 W. W. Elder, through 3-in. tapered tubing (½ hr.) 17
Shell Pet. Corp.'s No. 5 E. W. Willoughby, through 3-in. tubing (½ hr.).... 12
The Texas Company's No. 2 Walls, through ¾-in. tubing choke 105
Tidal Oil Co.'s No. 3 M. B. Huey, through open tubing 210
Welch & Sandler's No. 1 D. Barnett, through various chokes (½ hr.)..... 20
Whittle & Cavanaugh's No. 2 Rose Brown, through various chokes, per day 75
Amerada Pet. Co.'s No. 2 Continental, through 1-in. tubing choke (½ hr.).. 35
Atlantic Oil & Prod. Co.'s No. 2 A. V. Bacle, through open tubing 150
Atlantic Oil & Prod. Co.'s No. 4 Tuttle, through tapered tubing 60
Barnsdall Oil Co.'s No. 6 Adams, through 1-in. tubing choke 139
Cal-Pet Corp.'s No. 2 Johnson, through 1-in. tubing choke (¼ hr.) 29
Canadian Prod. Co.'s No. 2 J. A. Whittaker, through 1-in. tubing choke (20 min.) 43
Deep Rock Oil Corp.'s No. 3 H. Pritchard, through open tubing 225
East Texas Ref. Co.'s No. 2 T. W. Tuttle, through 1-in. tubing choke 88
Fain & McGaha's No. 4 Bauknight, through open tubing 200
F.H.E. Oil Co.'s No. 7 B. Christian, through ¾-in. tubing choke 94
Heyser & Heard's No. 4 Hindman, through ¾-in. tubing choke 75
D. L. Hoffman's No. 1 B. F. Phillips, through open tubing 150
Humble Oil & Ref. Co.'s No. 5 Armstrong, through ¾-in. tubing choke (20 min.) 28
Humble Oil & Ref. Co.'s No. 1 J. H. Sheppard, through various chokes, per day 75
Lecker & Hubbard's No. 3 J. M. Tuttle, through open tubing (¼ hr.) 30
Peyton Bros.' No. 2 J. M. Christian, through 1-in. tubing choke (¼ hr.).. 35
B. F. Phillips' No. 3 T. B. Harris, through 1-in. tubing choke (¼ hr.).. 59
Pilot Oil Co.'s No. 3 T. B. Harris, through 1-in. tubing choke (¼ hr.).. 45
Red Star Oil Co.'s No. 4 M. Lemaire, through 1-in. tubing choke (25 min.) 40
J. C. Reese et al's No. 1 Mood, through 1-in. tubing choke (¼ hr.) 40
Selby Oil & Gas Co.'s No. 4 L. C. Ingram, through 1-in. tubing choke (35 min.) 68
Shell Pet. Corp.'s No. 1 O. Lockett, through tapered tubing (½ hr.) 21
Shell Pet. Corp.'s No. 8 Richey, through tapered tubing (½hr.) 25
Simms and Russ' No. 3 J. J. Flewellen, through open tubing 300
E. L. Smith's No. 1 E. E. Anderson, through 1-in. tubing choke 130
Sun Oil Co.'s No. 5 Satterwhite, through open tubing 100
Woodley Pet. Co.'s No. 2 T. B. Harris, through open tubing 100
Yount Lee Oil Co.'s No. 3 Calvin, through 1-in. tubing choke 82
Yount Lee Oil Co.'s No. 3 A. McCrairy, through 11/16-in. tubing choke 90
Yount Lee Oil Co.'s No. 3 Pat Hopkins, through 11/16-in. tubing choke 86
Arkansas Fuel Oil Co.'s No. 2 Hughey-Ross, through open tubing (½ hr.).. 49
Atlantic and Byrd-Frost's No. 4 M. B. Hughey, through tapered tubing 40
Byrd-Frost Oil Co.'s No. 2 M. B. Hughey, through 2½-in. tubing choke 94
Danciger Oil & Ref. Co.'s No. 1 Bell, through open tubing 7
Empire Gas & Fuel Oil Co.'s No. 1 Taylor, through 2-in. tubing choke (¼ hr.) 35
Gulf Prod. Co.'s No. 13 Hilburn, through ¾-in. tubing choke 65
H. R. Smith, Inc.'s No. 2 D. M. Peterson, swabbing, per day 72
Humble Oil & Ref. Co.'s No. 2 D. Thomas, through open tubing (½ hr.) 32
T. D. Humphrey et al's No. 4 A. Spear, pinched through tubing, per day..... 75
Invincible Oil Co.'s No. 2 Register, through 2-in. tubing choke (½ hr.).. 20
Silver Star Oil Co.'s No. 1 King, through open tubing 65
Republic Prod. Co.'s No. 2 Clayton heirs, through 1½-in. tubing choke (½ hr.) 75
John Droppleman's No. 1 Martin, through open tubing (5 min.) 15
Sells Pet. Corp.'s No. 2 E. E. Sibley, through ¾-in. tubing choke (¼ hr.) 45
Shell Pet. Corp.'s No. 2-B M. H. Bivins, through tapered tubing (½ hr.)..... 17
Shell Pet. Corp.'s No. 1 B. F. Laird, through tapered tubing (½ hr.)..... 11
Sinclair Oil & Gas Co.'s No. 3 Joe Lawther, through open tubing (½ hr.) 45
Solar Drilling Co.'s No. 1 Elder, through ¾-in. tubing choke (¼ hr.)..... 12
Stanolind Oil & Gas Co.'s No. 2 Clayton, through 2-in. tubing choke (20 min.) 54
Sun Oil Co.'s No. 1 G. Reeves, through 2-in. tubing choke 106
Tidal Oil Co.'s No. 7 M. G. Barton, through tubing and one 3-in. line casing 648
Weaver-Crim Corp.'s No. 9 Ben Laird, through open tubing (20 min.)..... 40
Abernathy & Kirkpatrick's No. 1 R. M. Wood, through 1-in. tubing choke (40 min.) 75
Amerada Pet. Co.'s No. 5 L. R. Hearne, through 1-in. tubing choke 110
Atlantic Oil & Prod. Co.'s No. 3 Duncan, through tapered tubing 53
Atlantic Oil & Prod. Co.'s No. 6 Duncan, through tapered tubing 33
Atlantic Oil & Prod. Co.'s No. 3 Wilson, through tapered tubing 64
Atlantic Oil & Prod. Co.'s No. 4 Wilson, through tapered tubing 36
Barnsdall Oil Co.'s No. 8 G. E. Adams, through 1-in. tubing choke 143
Barnsdall and Houston's No. 10 McGrede, through 1-in. tubing choke..... 134
J. Beard et al's No. 2 W. L. Fuller, through 1-in. tubing choke 71
Bishop Oil Corp.'s No. 2 Todd, through 1-in. tubing choke (¼ hr.) 16
Columbia Oil & Gas Co.'s No. 1 Castleberry ..... abd
East Texas Ref. Co.'s No. 2 C. Christian, through ¾-in. tubing choke (½ hr.) 50
Faith Oil Co.'s No. 1 Walters, through open tubing (10 min.) 25
S. A. Guiberson's No. 2 Thrasher & Stuckey, through 1-in. tubing choke.. 93
Humble Oil & Ref. Co.'s No. 7 W. R. Hughes, through ¾-in. tubing choke (¼ hr.) 23
Moss et al's No. 2 Tennery, through open tubing (24 hrs.) 55
Prairie Oil & Gas Co.'s No. 3 Adkins, through ⅝-in. tubing choke 34
A. D. Robinson et al's No. 1 L. Rodden, through 1-in. tubing (¼ hr.) 25
Shasta Oil Co.'s No. 3-A Campbell, through ¾-in. tubing choke 75
Shell Pet. Corp.'s No. 1 B. Moore, through tapered tubing 34
Shipper et al's No. 2 Maggie Magrill, through casing 471
Stanolind Oil & Gas Co. and Simms Oil Co.'s No. 1 Akin, through open tubing (¼ hr.) 45
Stanolind and Simms Oil Co.'s No. 12 Person, through open tubing (¼ hr.) 70
Tidal Oil Co.'s No. 6 J. J. Castleberry, through open tubing (10 min.) 10
Tidal Oil Co.'s No. 3 Arch Davis, through open tubing (10 min.) 43
Tidal Oil Co.'s No. 5 W. E. Jones, through open tubing (10 min.) 27
M. E. Trapp et al's No. 1 A. N. Neeley, through 1-in. tubing choke (½ hr.).. 45
Waggoner & McCownell's No. 1 A. J. Green, through 1-in. tubing choke (¼ hr.) 26
Yount Lee Oil Co.'s No. 2 M. Custer, through 11/16-in. tubing choke 74
Yount Lee Oil Co.'s No. 3-C F. K. Lathrop, through 11/16-in. tubing choke 86
Doss & Jones' No. 4 Hagler, through ¾-in. tubing choke (½ hr.)..... 72
Gulf Prod. Co.'s No. 7 Birdsong, through ¾-in. tubing choke 77
Gulf Prod. Co.'s No. 3 C. Brown, through ¾-in. tubing choke 140
Gulf Prod. Co.'s No. 14 Hilburn, through ¾-in. tubing choke 78
Gulf Prod. Co.'s No. 6 W. Holt, through ¾-in. tubing choke 100
D. M. Hester's No. 1 Crews, through open tubing 75
Jones & O'Brien, through ¾-in. tubing choke (½ hr.) 40
B. F. Findley's No. 1 C. C. Crews..... abd
Magnolia Pet. Co.'s No. 4 Sam Carr, through 1-in. tubing choke 176
Magnolia Pet. Co.'s No. 5 J. King, through ¾-in. tubing choke and 5-in. line (5 min.) 32
Bay Oil Corp.'s No. 1 W. P. Crews, through ¾-in. tubing choke 60
Quad Oil Corp.'s No. 1-A Duncan, through pinched tubing 72
Searight et al's No. 2 J. M. Blackman, through pinched tubing, per day..... 72
Shell Pet. Corp.'s No. 4-A M. H. Bivens, through tapered tubing (½ hr.)..... 13
Shell Pet. Corp.'s No. 2 Jones, through tapered tubing 32
Stroube & Stroube's No. 1 M. B. Hughey, through tapered tubing 45
Wheelock & Collins' No. 3 Clayton heirs, through open tubing 190

Wells completed 222
Initial production 16,734
Abandoned wells 3

HENDERSON COUNTY

South American Drilling Co.'s No. 1 D. R. Boone ..... abd

LAMAR COUNTY

Optometrist Oil Club's No. 1 J. M. McFadden ..... abd

RED RIVER COUNTY

Harris and Joiner's No. 1 Howison.... abd
Gibbs et al's No. 1 Mace ..... abd
L. G. Priest et al's No. 1 J. M. Stiles . abd
J. Fred Johnson's No. 1 J. E. Styles .. abd

Wells completed 4
Abandoned wells 4

RAINS COUNTY

C. H. Bayliss' No. 1 Ownby ..... abd

RUSK COUNTY

A. W. Jones Oil Co.'s No. 1 J. M. Grant abd
Mrs. S. S. Thompson's No. 1 Price..... abd
Darby Pet. Co.'s No. 4 C. O. Christian, through ¾-in. tubing choke (½ hr.) 30
DeArman Bros.' No. 3 M. E. King, through pinched tubing, per day..... 75
Gulf Prod. Co.'s No. 6 A. Laird, through ¾-in. tubing choke 114
Louisiana Oil & Ref. Co.'s No. 1 Jernigan, through 1-in. tubing choke (¼ hr.) 36

Humble Oil & Ref. Co.'s No. 15-B S. S. Laird, through ¾-in. tubing choke... 11
Magnolia Pet. Co.'s No. 4 S. E. Brox, through ¾-in. tubing choke (¼ hr.) 21
Oliphant et al's No. 2 W. P. Moore, through ¾-in. tubing choke 39
Shell Pet. Corp.'s No. 8 Moore, through tapered tubing (½ hr.) 20
Sinclair Oil & Gas Co.'s No. 2-A Major Kennedy, through open tubing 87
Tidal Oil Co.'s No. 2 S. S. Laird, through open casing and tubing 87
Wheelock & Collins' No. 7 Dick Wells, through open tubing 125
S. P. Borden's No. 1 R. G. Mason, through ¾-in. tubing choke (35 min.) 35
Golding & Murchinson's No. 1-C E. L. Pinkston, through open tubing, by heads 30
Gulf Prod. Co.'s No. 3 W. P. Keeling, through open tubing 100
Gulf Prod. Co.'s No. 1 J. W. Shaw, through ¾-in. tubing choke 45
Humble Oil & Ref. Co.'s No. 5 J. H. Arnold, through tubing (½ hr.)..... 48
Humble Oil & Ref. Co.'s No. 2 Azzie Scott, through ¾-in. tubing choke... 70
Humble Oil & Ref. Co.'s No. 3-A R. E. L. Silvey, through ¾-in. tubing choke 72
Humble Oil & Ref. Co.'s No. 4 Thompson, through ¾-in. tubing choke (½ hr.) 45
Lide & Rose No. 3 Calvin Young, through open tubing 55
Mid-Kansas Oil & Gas Co.'s No. 4 R. G. Mason, through open tubing 134
I. P. O'Neal's No. 3 Mayfield, through open tubing 170
Ortiz Oil Co.'s No. 2 Calvin Young, through open tubing 100
Overton Ref. Co.'s No. 2 M. L. Jones, through open tubing (½ hr.)..... 93
Reed & Reed's No. 2 M. M. Thompson, through open tubing (½ hr.) 70
Reynolds-Blankenship and Trapp's No. 1 Graven, through open tubing (½ hr.) 65
Sinclair Oil & Gas Co.'s No. 1 W. H. McCord, through open tubing 62
Tidal Oil Co.'s No. 3 Finney, through open tubing 70
Tidal Oil Co.'s No. 4 Joel Shaw, through open casing (10 min.) 47
Devonian and Gulf Prod. Co.'s No. 9 Motley, through ¾-in. tubing choke.. 100
John B. Gregory's No. 1 R. M. Leath.. abd
Humble Oil & Ref. Co.'s No. 1-C W. P. Moore, through ¾-in. tubing choke (½ hr.) 51
Lewis Prod. Co.'s and Selby Oil & Gas Co.'s No. 4 L. C. Peques, through 2½-in. tubing choke 220
N. G. Sampson's No. 1 Brock estate, through pinched tubing, per day ... 75
Shell Pet. Corp.'s No. 9 Rosa Russell, through tapered tubing (½ hr.)..... 21
Arrow Drilling Co.'s No. 3 Rollins, through open tubing 220
George Demonstrand's No. 1 L. J. Pinkston, through open tubing (½ hr.)... 80
Gulf Prod. Co.'s No. 6 E. E. Thrash, through open tubing (½ hr.)..... 85
Humble Oil & Ref. Co.'s No. 2 Virginia Turner, through ¾-in. tubing choke (½ hr.) 52
Humble Oil & Ref. Co.'s No. 9 J. E. Whellis, through pinched tubing (½ hr.) 52
R. L. Hunt's No. 2-D Fair, through open tubing 50
Kirby Pet. Co.'s No. 2-B Gramling, through open tubing 200
M. H. McMurray's No. 2 Blackwell, through 2½-in. tubing choke (½ hr.) 75
Mid-Kansas Oil & Gas Co.'s No. 2 T. O. Warren, through 1-in. tubing choke.. 70
Perry-Woody and Boller's No. 4 Thrash, through open tubing 30
Spider Oil Co.'s No. 1 Florey & Neal, through open tubing (3½ hrs.)..... 300
Standard Pipe & Supply Co.'s No. 3 Brett, through open tubing 121
Stanolind and Pure Oil Co.'s No. 2 R. A. Moores, through 2-in. tubing choke... 100
Tulsa Oil Co.'s No. 2 C. F. O'Quinn, through 1-in. tubing choke (45 min.) 131
Grady Vaughan's No. 4 W. O. Alford, through open tubing 150
Gulf Prod. Co.'s No. 4-A C. E. Christian, through ¾-in. tubing choke 70
Humble Oil & Ref. Co.'s No. 1 Barton, through 2-in. tubing choke 62
K. & P. Oil Co.'s No. 3 Brock estate, pinched through tubing, per day..... 75
Magnolia Pet. Co.'s No. 3 M. E. Peterson, through ¾-in. tubing choke and 3-in. casing choke (5 min.) 37
Republic Prod. Co.'s No. 3 B. F. Hinman, through 1½-in. tubing choke (¼ hr.) 30
Shell Pet. Corp.'s No. 9 W. P. Moore, through tapered tubing (½ hr.) ... 18
Tidal Oil Co.'s No. 4 Terrell, through pinched tubing, per day 75
Ajax Oil Corp.'s No. 3 Saunders, through open tubing (½ hr.) 65
Crabtree-Foster et al's No. 2 Giels, through open tubing 62
East Texas Ref. Co.'s No. 4 Grissom, through open tubing (20 min.) 60
Golding & Murchinson's No. 2 E. L. Pinkston, through open tubing 85
Grayburg's No. 5 Kangerga, through open tubing (½ hr.) 76
Gulf Prod. Co.'s No. 7-B Ida Holt, through ¾-in. tubing choke 85
Gulf Prod. Co.'s No. 2 Hoxie Johnson, through ¾-in. tubing choke 65
Humble Oil & Ref. Co.'s No. 3-C Ida Holt, through ¾-in. tubing choke (½ hr.) 42
Humble Oil & Ref. Co.'s No. 3 Pilgrim, through ¾-in. tubing choke (½ hr.) 43
Humble Oil & Ref. Co.'s No. 2-B R. E. Silvey, through ¾-in. tubing choke (½ hr.) 41
Lion Oil & Ref. Co.'s No. 6-B Brooks, through open tubing 49
Mid-Kansas Oil & Gas Co.'s No. 3 M. C. DeGuerin, through 1-in. tubing choke 110
Prairie Oil & Gas Co.'s No. 6 J. B. Wilson, through ¾-in. tubing choke.. 80
Sayre Oil Co.'s No. 4 Samp Stone, through open tubing (½ hr.) 60
Sinclair Oil & Gas Co.'s No. 5-B Mayfield, through open tubing (½ hr.) 45
Sun Oil Co.'s No. 3 Mrs. A. Barksdale, through open tubing 115
Sun Oil Co.'s No. 4 S. A. Selman, through open tubing 84
Tex-Jersey Oil Co.'s No. 2-A W. P. Keeling, through open tubing (½ hr.) 60
Grady Vaughan's No. 3 Reagan, through open tubing (½ hr.) 90
East Texas Ref. Co.'s No. 2 West Andy Givens, pinched tubing per day 75
Everts Drilling Co.'s No. 2 C. O. Christian, through pinched tubing, per day 75
Gulf Prod. Co.'s No. 7 Florence, through ¾-in. tubing choke 75
Guif Prod. Co.'s No. 1-A H. Sexton, through ¾-in. tubing choke 75
Republic Prod. Co.'s No. 2 J. R. Scroggins, through 1½-in. tubing choke (½ hr.) 40
Sinclair Oil & Gas Co.'s No. 1-B Major Kennedy, open casing 35
Skelly et al's No. 1 L&G.N., per day pinches through tubing 75
Wheelock & Collins' No. 8 D. Wells, through open tubing 100
Golding & Murchinson's No. 8 Ida L. Kinney, through open tubing 70
Great Eastern Oil Co.'s No. 1 E. B. Alford, through open tubing 30
Gulf Prod. Co.'s No. 1 W. O. Alford, through open tubing 30
Haynes Drilling Co.'s No. 5 Brown, through open tubing (½ hr.) 45
Humble Oil & Ref. Co.'s No. 5 J. R. Box, through ¾-in. tubing choke (½ hr.) 50
Humble Oil & Ref. Co.'s No. 4 C. A. Brightwell, through ¾-in. tubing choke (½hr.) 50
Gordon McMillan, Tr.'s No. 2 M. A. Thrash, through open tubing (½ hr.) 45
Marvin H. McMurray's No. 3 Blackwell, through open casing (¼ hr.) 150
John Mabee's No. 3 Brett .....no gauge
Ortiz Oil Co.'s No. 2 H. M. Hale, through open tubing 65
Sonbar's No. 4 Finney, through open tubing 45
Stanolind Oil & Gas Co.'s No. 1 Siler, through 2½-in. tubing based on 15 min. gauge 150
C. K. West, Tr.'s No. 1 Jessie Cole, through open tubing (½ hr.) 75
Gulf Prod. Co.'s No. 4C. E. Christian, through ¾-in. tubing choke 45
Humble Oil & Ref. Co.'s No. 1 W. D. Peterson, through ¾-in. tubing choke 55
Lewis Prod. and Selby Oil & Gas Co.'s No. 5 L. C. Peques, through ¾-in. tubing choke in 20 min. 40
Rajo Oil Corp.'s No. 1 L&G.N., through ¾-in. tubing choke (¼ hr.) 25
Tidal Oil Co.'s No. 6 Moore, through tubing, per day 72
British-American's No. 5 J. D. Stone, through open tubing 170
Jim Cloud's No. 2 W. F. Neal, through open tubing (10 min.) 21
Gulf Prod. Co.'s No. 1-D Mayfield Co., through ¾-in. tubing choke 78
Hugh Edwards Hale's No. 1 Marshall, through open tubing 44
Humble Oil & Ref. Co.'s No. 4-C Ida Holt, through ¾-in. tubing choke ... 58
Humble Oil & Ref. Co.'s No. 17 Kangerga, through ¾-in. tubing choke.. 73
Humble Oil & Ref. Co.'s No. 3-B J. E. Sexton, through ¾-in. tubing choke (¼ hr.) 40
Humble Oil & Ref. Co.'s No. 4-A R. E. L. Silvey, through ¾-in. tubing choke (½ hr.) 55
Humble Oil & Ref. Co.'s No. 3-B R. E. L. Silvey, through ¾-in. tubing choke (½ hr.) 49
Kirby Pet. Co.'s No. 3 Joe Williams, through open tubing (½ hr.) 75
Mid-Kansas Oil & Gas Co.'s No. 1 H. C. and G. W. Burton, through open tubing 150
Mid-Kansas Oil & Gas Co.'s No. 2 J. M. Price, through open tubing 170
Sinclair Oil & Gas Co.'s No. 18 Kinney, through open tubing (¼ hr.) 52
G. C. Wood's No. 1 Mrs. J. B. Irwin, through open tubing 20

Initial production 3463
Wells completed 117
Abandoned wells 3

SMITH COUNTY

C. B. Bunte, Inc.'s No. 1-B A. S. Jarvis, through 1-in. tubing choke 80
Droopleman Drlg. Co.'s No. 1 Dequerin, through open tubing 185
W. L. Sessions' No. 1 Attaway .....no gauge
Sun Oil Co.'s No. 7 J. D. Henson, through open tubing 97
Williford Co.'s No. 1 S. S. Cooke, through open tubing (½ hr.) 65
Graham Brothers' No. 1 Church Lot, through open tubing (½ hr.) 30
Sinclair Oil & Gas Co.'s No. 10-A Jarvis, through open tubing 340
Sun Oil Co.'s No. 9 O. W. Knight, through open tubing 80
K. O. T. Oil Co.'s No. 1 S. S. Cooke, through open tubing (½ hr.) 45
Pine Grove Oil Co.'s No. 1 S. S. Cooke, through open tubing (½ hr.) 45
Sinclair Oil & Gas Co.'s No. 9-A Jarvis, through open tubing (¼ hr.) .. 45
Sinclair Oil & Gas Co.'s No. 10 Dora Wright, through open tubing (¼ hr.) 45
Vitex Combined Oil Co.'s No. 1 Irion.. abd
Iowan Payne Oil Co.'s No. 1 J. B. Wilson, through open tubing (¼ hr.) ... 40
Sinclair Oil & Gas Co.'s No. 7 R. G. Wright, through open tubing (¼ hr.) 46
Sun Oil Co.'s No. 1-B H. A. Pace, through open tubing 96

Initial production 1238
Wells completed 16
Abandoned wells 1

UPSHUR COUNTY

Cal-Pet Corp.'s No. 3 Stincomb, through 1-in. tubing choke (25 min.) 35
E & D Oil Co.'s No. 1 J. W. Free, through ¾-in. tubing choke (½ hr.) 20
Mead Brothers' No. 2 Walker, through pinched tubing, per day 70
J. A. Woods' No. 3 A. J. Sanders, through ¾-in. tubing choke (½ hr.) 93
Atlantic Oil & Prod. Co.'s No. 8 Moyers, through 1-in. tubing (¼ hr.) .. 16
Conservative Oil Co.'s No. 1 Victory, through 1-in. tubing choke 100
Falvey et al's No. 1 S. D. Rodden, through 1-in. tubing choke 75
Humble Oil & Ref. Co.'s No. 11 Edwards, through 1-in. tubing choke (¼ hr.) 15
Humble Oil & Ref. Co.'s No. 13 Edwards, through ¾-in. tubing choke .. 61
Humble Oil & Ref. Co.'s No. 2 E. W. Smith, through ¾-in. tubing choke.. 53
Jackson & Bradstreet's No. 1 Victory, through open tubing 120
Sorrells et al's No. 1 Brawley Estate, flowing by heads, per day 75
Fleetborn Oil Corp.'s No. 4 Edwards, through open tubing (½ hr.) 85
Galvez Oil Corp.'s No. 2 W. W. Holland, through open tubing (¼ hr.) 75
Glasscock's No. 1 Missionary Church, through open tubing 60
Shell Pet. Corp.'s No. 10 C. C. Landers, through tapered tubing (½ hr.) 12
Sun Oil Co.'s No. 2 A. J. Watkins, through open tubing 70
Wood and Nelson's No. 1 H. C. Coslett. abd
Clarston et al's No. 1 Eva O'Byrne, through 1-in. tubing (¼ hr.) 16
East Texas Ref. Co.'s No. 2 Doby Rodden, through open tubing (½ hr.).. 98
Shell Pet. Corp.'s No. 2 L. Brawley, through tapered tubing (60 min.) ... 15
E. & D. Oil Co.'s No. 1 Thomas Well, through 1-in. tubing choke 100
Eslick et al's No. 1 H. F. Whitehurst, through 1-in. tubing choke (10 min.) 25
Humble Oil & Ref. Co.'s No. 3 Ethel Edwards, through ¾-in. tubing choke 80
Humble Oil & Ref. Co.'s No. 2-B Miller, through ¾-in. tubing choke 76

Initial production 1445
Wells completed 25
Abandoned wells 1

VAN ZANDT COUNTY

Pure Oil Co.'s No. 4 R. V. White ..... gas
Pure Oil Co.'s No. 8 F. B. Smith, through 11/16-in. tubing choke 190
Pure Oil Co.'s No. 1 W. F. Cade ..... abd
The Texas Co.'s No. 3 J. A. Bracken, through 11/16-in. tubing choke 357
Pure Oil Co.'s No. 1-T V. T. Davis .... abd
Pure Oil Co.'s No. 5 M. P. Niell, through 11/16-in. tubing choke 182
Pure Oil Co.'s No. 2 W. E. Morris, through 11/16-in. tubing choke 18
Pure Oil Co.'s No. 10 F. B. Smith, through 11/16-in. tubing choke 145
Pure Oil Co.'s No. 2 B. Russell ..... abd
Priest et al's No. 1 B. G. Beckham ... abd
Thomasson et al's No. 1 Mrs. Corley .. abd
Pure Oil Co.'s No. 3 J. H. Leonard, through 11/16-in. tubing choke 110
Pure Oil Co.'s No. 3 J. M. Martin, through 11/16-in. tubing choke 190

Initial production 1192
Wells completed 13
Abandoned 5
Gas 1

WOOD COUNTY

Yankee Oil Co.'s No. 1 Davis ..... abd

Abandoned 1

EAST TEXAS (Border Counties Summary of Field Operations

	Comp.	Prod.	Dry	Gas	*Rgs.	Dlg.	Ttl.
Bowie	0	0	0	0	1	3	4
Cass	1	0	1	0	0	7	7
Harrison	0	0	0	0	2	1	3
Marion	0	0	0	0	0	2	2
Panola	1	0	0	1	2	6	8
Red River	0	0	0	0	0	2	2
Shelby	1	0	1	0	2	11	12
Ttl. Mar.	3	0	2	1	7	32	39
Ttl. Feb.	2	0	2	1	4	29	33
Difference	0	0	0	0	3	3	6

*Gas production: Panola, 5,000,000 feet.

EAST TEXAS (Border Counties)

WELLS COMPLETED

CASS COUNTY

Martha Ingram Sur.—McDonald, Wm. S. King 1 ..... dry

PANOLA COUNTY

Jane Thorp Sur.—Mays, Nat. Gas Prod. Co. 3 ..... gas
Wells completed 1
Gas 1
Gas production 500,000

SHELBY COUNTY

C. Z. Walker Sur.—Henry, Tenant et al 1 ..... dry

NORTH CENTRAL TEXAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Archer	2	56	1	0
Baylor	0	0	0	0
Brown	4	0	3	1
Callahan	3	25	1	0
Clay	1	0	1	0
Coleman	1	0	1	0
Comanche	1	0	1	0
Eastland	1	20	0	0
Foard	1	0	1	0
Jack	2	0	2	0
Palo Pinto	9	100	1	7
Shackelford	6	23	4	0
Stephens	1	0	1	0
Throckmorton	1	10	0	0
Wichita	7	292	5	0
Wilbarger	3	48	1	0
Young	14	410	6	0
Total March	57	984	29	8
Total February	67	2,036	39	2
Difference	10	1,052	10	6

Summary of Rigs and Wells Drilling

County—	Rigs	S.D.	Drlg.	Ttl.
Archer	7	5	20	32
Brown	3	6	1	10
Callahan	2	2	0	4
Coleman	3	5	3	11
Cooke	4	0	2	6
Clay	0	0	0	0
Eastland	1	2	5	8
Erath	0	1	0	1
Jack	0	2	1	3
Palo Pinto	2	7	6	15
Shackelford	4	0	5	9
Stephens	0	2	3	5
Throckmorton	2	3	0	5
Wichita	1	4	1	6
Wilbarger	0	1	0	1
Young	15	7	17	39
Miscellaneous	3	9	8	20
Total March	47	56	72	175
Total February	48	60	65	173
Difference	1	4	7	2

WELLS COMPLETED

ARCHER COUNTY

J. T. Richardson, Pet. Prod. Co. et al 1. 56
S. B. Herron, Snoddy & Somers 1 ..... abd
W. M. Coleman, Brown & Lickey 1 ... dry

Completions 2
Production 56
Dry 1

BAYLOR COUNTY

W. H. Portwood, Consolidated Oil Co. et al 1 ..... abd

BROWN COUNTY

Fry (Burnett), S. C. Herring 1 ..... dry
J. A. Baker, F. A. Lane & Anderson Drewry Corp. 1 ..... gas
R. M. Lowe, The Texas Company 87 ... dry
W. F. Curry, Shead et al 1 ..... dry

Completions 4
Dry holes 3
Gas wells 1

CALLAHAN COUNTY

O. E. Radford, Guffy & Perry 2 25
Cora Grisham, Hart Bros. 1 ..... gas
O. & G. Berry, Perry George et al 1 ... dry

Completions 3
Production 25
Dry holes 1

CLAY COUNTY

F. T. Wade, Roy C. Ling 1 ..... dry

COLEMAN COUNTY

Aldridge, Groves & Shield 1 ..... dry

COMANCHE COUNTY

S. J. Strickland, J. F. Carter et al 1 ... dry

EASTLAND COUNTY

J. T. Stamps, The Texas Company et al 1 20

FOARD COUNTY

L. K. Johnson et al, The Texas Company 1 ..... dry

JACK COUNTY

H. C. Moore, Easter Oil Co. 1 ..... abd
L. S. Wright, Texas Plains 1 ..... dry
E. J. Shawver, J. M. Seaberry 1 ..... abd

PALO PINTO COUNTY

J. Witskey, C. F. Gibson 1 ..... gas
M. L. Askew, Gordon & Gholson 1 ... gas
L. B. Strawn, Hoffman & Page 1 ..... gas
Willie Gibson, King & Grounds 1 ..... gas
C. Crocker, Montgomery et al 1 ..... gas
Smith, Palo Pinto Gas Corp. 1 ..... gas
W. R. Baker, Strawn Dev. Co. 1..... gas
F. P. Simmonds, Dunkell & O'Donnell 1 100
M. Briggs, Prairie O. & G. Co. 1 ..... dry

Completions 9
Production 100
Dry holes 1
Gas wells 7

SHACKELFORD COUNTY

E. A. Jeter, Albany Oil Co. 1 20
C. Flippen, J. A. Bearman 1 ..... dry
S. R. Butler, J. A. Butler et al 1 3
M. Huber, A. B. Bissey 1 ..... dry
W. G. Webb, Cross & Caskin 2 ..... dry
L. H. Hill, Union O. & M. Co. 1 ..... dry

Completions 6
Production 23
Dry holes 4

STEPHENS COUNTY

T. Sylvanus, Lone Star Gas Co. 1 ..... dry

THROCKMORTON COUNTY

H. A. Wilhelm, J. D. Barton 1 10

WICHITA COUNTY

J. H. Musgrave, R. P. Dorian 1 ..... dry
Geo. Heiserman-C, Burns & Long 8 ... 1
Ward & Todd, R. R. Clark 2 ..... dry
T. L. Burnett, Madison O. & G. Co. 19 (recompleted) 12
T. L. Burnett, Madison O. & G. Co. 21. dry
E. E. Goetze, Mogren & Anderson 25 ... 75
E. E. Goetze, Mogren & Anderson 26 ... 216
Geo. L. Doble, Chas. Daubert et al 1 ... dry
1-D A. W. Burnside, Mid-Cont. Hold. Corp. 1-D ..... dry

Completions 7
Production 292
Dry holes 5

WILBARGER COUNTY

W. H. Johnson, Bowman Drilling Co. 1. dry
W. T. Waggoner, E. B. Lawson estate 1 abd

Waggoner-E, Waggoner Ref. Co. 14 ... 40
Waggoner-J, Waggoner Ref. Co. 16 ... 8

Completions 3
Production 48
Dry holes 1

YOUNG COUNTY

E. P. Cullers, Brand & Seaberry 1 40
H. K. Weems, Fain-McGaha Oil Corp. 1 dry
W. S. Husted, Snoddy & Perry 1 ..... dry
J. E. Robinson, F. E. Webb 1 ..... dry
D. L. Wolf, D. L. Wolf 3 72
W. S. White, Brazelton & Price 1 ..... dry
J. P. Dunagan, Cooper Mitchell et al 3. 30
W. T. Finch, F. H. E. Oil Co. 3 ..... abd
J. R. Wilson, N. D. Goldsmith 1 61
S. R. Jeffery-I, W. H. Hammon 1 ..... dry
R. W. Blackman, Jack Harris 1 ..... abd
Larimore, United Prod. Co. 5 50
A. C. Watson, R. J. Watson 10 82
C. D. Leberman, O. C. Williams 1 .... dry
D. L. Wolf, D. L. Wolf 2 50
A. E. Robinson, Wooten & Reed 1 25

Completions 14
Production 410
Dry holes 6

PANHANDLE FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Carson	2	0	0	2
Gray	2	320	0	0
Hutchinson	1	250	0	0
Moore	1	0	0	1
Wheeler	1	0	1	0
Total March	7	570	1	3
Total February	6	1,525	2	1
Difference	1	955	1	2

Summary of Rigs and Wells Drilling

County—	Rigs	S.D.	Drlg.	Ttl.
Carson	2	0	3	5
Gray	6	6	11	23
Hutchinson	1	4	3	8
Moore	3	1	1	5
Wheeler	0	1	0	1
Miscellaneous	0	7	2	9
Total March	12	19	20	51
Total February	14	14	25	53
Difference	2	5	5	2

WELLS COMPLETED
CARSON COUNTY

J. Gores-G, Texoma Natural Gas Co. 1.. gas
1-A Burnett-P, Texoma Natural Gas Co. 1-A ..... gas

Completions 2
Gas wells 2
Gas production 47,500,000

GRAY COUNTY

J. S. Morse-A, Sullivan & Ochiltree 1... 20
H. Schafer, Skelly Oil Co. 24 300
4 Wm. Jackson (North), Skelly Oil Co. 4 (recompletion) 10
W. J. Brown, The Texas Company 3 (recompletion) ..... dry

Completions 2
Production 320

HUTCHINSON COUNTY

J. A. Whittenburg-B, H. Stekoll 5 250

MOORE COUNTY

Sneed, Sec. 37, Texas Interstate P. L. Co. 1 ..... abd
Thompson, Sec. 23, Texas Interstate P. L. Co. 1 ..... abd
R. S. Coon-M, Texoma Nat. Gas Co. 4.. gas
Terry Thompson-C, Canadian River Gas Co. 1 ..... abd
W. Coffee-C, Shamrock O. & G. Co. 1 (recompletion) 100

Completions (new) 1
Gas wells 1
Gas production 19,000,000

WHEELER COUNTY

J. M. Porter Harvey Pet. Co. 1 ..... dry

WEST TEXAS FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Culberson	1	0	1	0
Fisher	1	15	0	0
Hudspeth	1	0	1	0
Irion	1	0	1	0
Loving	3	137	1	0
Runnels	1	0	1	0
Ward	3	145	0	0
Winkler	1	0	1	0
Upton	1	1,080	0	0
Total March	13	1,377	6	0
Total February	8	852	2	0
Difference	5	525	4	0

Summary of Rigs and Wells Drilling

County—	Rigs	S.D.	Drlg.	Ttl.
Crane	0	0	0	0
Ector	0	1	1	2
Fisher	3	0	3	6
Howard	2	0	4	6
Irion	1	0	2	3
Jones	3	1	0	4
Loving	4	5	4	13
Pecos	1	4	3	8
Reagan	0	1	2	3
Upton	1	0	2	3
Ward	6	7	8	21
Winkler	0	0	1	1
Miscellaneous	5	21	9	35
Total March	26	40	39	105
Total February	17	47	38	102
Difference	9	7	1	3

WELLS COMPLETED
CULBERSON COUNTY

W. D. Garren, W. L. Kornrumpf et al 1 dry

FISHER COUNTY

Mrs. L. J. Sipe, Cranfill & Reynolds 1. 15
HOWARD COUNTY
W. R. Settles-A, American Maracaibo Co. 3 (second completion) 1440
HUDSPETH COUNTY
Mrs. Kate Siegle Briggs, R. G. Patillo & Ed Welch 1 ..... dry
IRION COUNTY
W. Lee, Straughan & Adkins Brothers 1 dry
LOVING COUNTY
Jim Wheat, Columbia O. & G. Co. 1 ... dry
J. J. Wheat, Harry Adams et al 1 107
W. B. Lind et al, Slack et al 1 30

Completions 3
Production 137
Dry holes 1

REAGAN COUNTY

University, Big Lake Oil Co. 2-C (recompleted) 3209
University, Texon O. & L. Co. 2-B (recompleted) 10,390
RUNNELS COUNTY
G. W. Dean, Chas. Dutton et al 1 ..... dry
WARD COUNTY
E. R. Allen, Anderson & Charlesworth 1 20
H. Archenhold, Prairie O. & G. Co. 2 .. 35
G. W. O'Brien et al, Sid Richardson et al 6 90

Completions 3
Production 145

WINKLER COUNTY

Grisham-Hunter, Republic Prod. Co. 3 (recompleted) 95
John Sealy estate, Sid Richardson et al 1 ..... dry
UPTON COUNTY
Crier-McElroy, Gulf Prod. Co. 9 1080

SOUTHWEST TEXAS FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drlg.	Ttl.
Bruner	0	0	0	0	1	1	2
Darst Creek	1	300	0	0	0	0	0
Eckert	3	24	0	0	1	1	2
Escobas	13	665	6	1	0	4	4
Charco Redondo	2	4	0	0	0	1	1
Gov't Wells	3	750	0	0	0	1	1
Pettus	3	400	1	1	1	2	3
Saxet	4	375	3	0	3	3	6
Los Olmos	9	100	2	1	2	5	7
West Cole	2	200	0	0	1	0	1
Miscellaneous	21	40	19	1	16	88	104
Total Mar.	61	2,858	31	4	25	106	131
Total Feb.	48	6,558	20	6	25	116	141
Difference	13	3,700	11	2	0	10	10

WELLS COMPLETED
PETTUS POOL—BEE COUNTY

Ray, Slick, Seeligson, Inc. 4 ..... gas
Ray, Buck Oil Co. 3 400
Ray, J. M. Davis (W. L. Morgan et al) abd
ECKERT POOL—BEXAR COUNTY
Halberdier, W. R. Swearingen et al 7... 8
Beck, Gatlin Oil Co. 10 8
Gembler, Alamo Natural Gas Co. 3 8
GOVERNMENT WELLS POOL—DUVAL COUNTY
Duval Land Co., S.R.C. & Magnolia Oil Co. 7 250
Bishop Cattle Co., Thomas & Tarver 6.. 300
Bishop Cattle Co., Duval Oil Co. 8 200
DARST CREEK POOL—GUADALUPE COUNTY
Denman, Humble Oil & Ref. Co. C-3 ... 300
SAXET POOL—NUECES COUNTY
Sedwick, Gulf Coast Oil Co. 2 375
Sedwick, Gulf Coast Oil Co. 3 ..... abd
Saragin, Gulf Coast Oil Co. 1 ..... abd
Elder, Gulf Coast Oil Co. 1 ..... abd
LOS OLMOS POOL—STARR COUNTY
Kelsey-Bass, Jack Tarver 1 20
Kelsey-Bass, Hooks & Weaver 4 20
Kusch, Quien Sabe Oil & Gas Co. 2 .... abd
Kelsey-Bass, W. W. Sullivan 1 ..... abd
Kelsey-Bass, Los Olmos Oil & Gas 9. 10
Kelsey-Bass, Los Olmos Oil & Gas 10 20
Ivey, San Marcos Oil & Gas Co. 6 .... gas
Kelsey-Bass, Hooks & Weaver 3 10
Fee, H. H. Davis 2 20
WEST COLE POOL—WEBB COUNTY
Benavides, Magnolia Petroleum Co. 6 .. 125
Benavides, French Oil Corp. 5 75
ESCOBAS POOL—ZAPATA COUNTY
Winch & Henne, F. H. Etheridge 3 .... abd
Trevino, K. & M. Oil Co. 1 ..... gas
Trevino, Trevino Oil Corp. B-1 20
Benavides, Winch & Billings 10 75
Garza, Brogan & Belcher 1 ..... abd
Medina, O. W. Killam 4 200
Montemayor, S.R.C. Oil Co. D-8 ..... abd
Trevino, Trevino Oil Corp. A-16 20
Bustamente, Winch & Billings 9 50
Bustamente, F. H. Etheridge 5 ..... abd
Medina, O. W. Killam 4 ..... abd
Medina, O. W. Killam 5 ..... abd
Montemayor, S.R.C. Oil Co. D-7 300
CHARCO REDONDO POOL—ZAPATA COUNTY
Martinez, Bob & Richey 28 2
Martinez, Bob & Richey 29 2

Wells completed 40
Production 2858
Gas production 40,250,000
Abandoned 12

MISCELLANEOUS COUNTIES
WILDCATS
Aransas County—
Giesecke, Big Lake Oil Co. 1 ..... abd
Bastrop County—
Bahme, E. R. Marts 2 ..... abd
Bexar County—
S. I. Farms, J. E. Anderson 1 ..... abd
Bradden, Van Duyn et al 1 ..... abd
Caldwell County—
Dunlop, M. O. Rayor 3 40
DeWitt County—
Tom, C.R.M. Drlg. Co. 1 ..... abd
Duval County—
Sutherland, O. W. Killam 1 ..... abd
Magnolia Petroleum Co. 1 ..... abd
Goliad County—
Parks, Plymouth Oil Co. 1 ..... abd
Gonzales County—
Botts, Nassmer, Gordeon Waldrop 1 ... abd
Jim Hogg County—
Hinnant, O. W. Killam 1 ..... abd
Jim Wells County—
Shaeffer, Gulf Production Co. 5 ..... gas
Live Oak County—
Brewer, Jacob, Buzzini & Pickett 1 .... abd
Medina County—
Adams, C. J. Webster Oil & Gas Co. 1. abd
Milam County—
Foster, Red Bank Oil Co. A-2 ..... abd
Nueces County—
Trott, A. C. Erwin 1 ..... abd
Travis County—
Shiffler, Fuchs et al 1 ..... abd
Williamson County—
Johnson, Hays & Gee 1 ..... abd
Speckels, R. S. Wilson 1 ..... a'd
Wilder, Burns et al 1 ..... abd
Wilson County—
Nickolson, A. M. Blume 1 ..... abd

Wells completed 21
Production 40
Gas production 30,000,000
Abandoned 19

GULF COAST FIELDS

Summary of Field Operations
Texas

Field—	Comp.	Prod.	Abd.	Gas	Rigs	Drlg.	Ttl.
Barbers Hill	4	3,655	0	0	3	9	12
Blue Ridge	0	0	0	0	0	1	1
Boling	1	0	1	0	0	0	0
Damon Mound	0	0	0	0	0	2	2
Esperson	1	275	0	0	0	1	1
Fannett	2	0	2	0	0	1	1
Goose Creek	1	5	0	0	0	1	1
Hankamer	0	0	0	0	0	1	1
High Island	1	360	0	0	0	3	3
Hull	2	820	0	0	0	1	1
Humble	3	70	1	0	0	2	2
Lost Lake	1	600	0	0	0	0	0
Manvel	1	90	0	0	0	1	1
Markham	3	0	3	0	0	3	3
Moss Bluff	3	0	3	0	0	1	1
Mykawa	0	0	0	0	0	1	1
Orange	0	0	0	0	0	1	1
Orchard	0	0	0	0	0	1	1
Pierce Jctn.	5	1,920	0	0	1	3	4
Port Neches	0	0	0	0	0	3	3
Rabbs Ridge	0	0	0	0	1	2	3
Refugio	1	50	0	0	0	8	8
Saratoga	3	137	0	0	0	1	1
Miscellaneous	4	0	4	0	3	22	25
Total Mar.	36	7,982	14	0	8	69	77
Total Feb.	46	12,438	28	0	11	65	76
Difference	10	4,456	14	0	3	4	1

Louisiana

Bayou Blue	0	0	0	0	0	1	1
Black Bayou	0	0	0	0	0	1	1
Choctaw	0	0	0	0	0	2	2
E. Hackberry	2	3,600	0	0	1	3	4
Edgerly	0	0	0	0	1	0	1
Iowa	0	0	0	0	0	2	2
Jennings	1	0	1	0	0	2	2
Lake Barre	0	0	0	0	0	2	2
Lake Pelto	1	0	1	0	0	0	0
Leesville	0	0	0	0	0	2	2
Lockport	0	0	0	0	0	1	1
Port Barre	1	825	0	0	0	3	3
Sulphur	0	0	0	0	0	3	3
Vinton	0	0	0	0	0	3	3
Miscellaneous	2	0	2	0	1	5	6
Total Mar.	7	4,425	4	0	3	30	33
Total Feb.	16	10,765	10	0	6	23	29
Difference	9	6,340	6	0	3	7	4
Total Gulf C.	43	12,407	18	0	11	99	110
Total Feb.	62	23,203	38	0	17	88	105
Difference	19	10,796	20	0	6	11	5

GULF COAST
WELLS COMPLETED
BARBERS HILL—CHAMBERS COUNTY
Wilburn, Gulf Prod. Co. 7 1200
Wilburn, McAlbert Oil Co. 5 680
Wilburn, The Texas Co. 8 75
Kirby, Texas Gulf Prod. Co. 6-H 1700

Wells completed 4
Production 3655
BOLING—WHARTON COUNTY
J. R. Farmer, Fain Oil Co. 1 ..... abd
ESPERSON—LIBERTY COUNTY
Davis, Cranfill-Reynolds Co. 4 275
FANNETT—JEFFERSON COUNTY
Thomas, Texas Gulf Sulphur Co. 3..... abd
Thomas, Texas Gulf Sulphur Co. 4..... abd

Wells completed 2
Abandoned 2
GOOSE CREEK—HARRIS COUNTY
Briggs, Gulf Prod. Co. 13 5
HIGH ISLAND—GALVESTON COUNTY
Cade, Yount Lee Oil Co. 25 360
HULL—LIBERTY COUNTY
Ray, W. B. Flynn 2 20
Dolbear, Republic Prod. Co. 145 800

Wells completed 2
Production 820
HUMBLE—HARRIS COUNTY
C. O. & G.-Texas Co. fee, Burt et al 1. abd
River, Sun Oil Co. 50 15
W. & P. Gulf fee, E. M. Wilson 8 55

Wells completed 3
Production 70
Abandoned 1
LOST LAKE—CHAMBERS COUNTY
Mayes, Pure Oil Co. 14 600
MARKHAM—MATAGORDA COUNTY
Myers, Doering & Newman 1 ..... abd
Smith, Duval Texas Sulphur Co. 3 ..... abd
Hudson, L. P. Smith et al 1 ..... abd

Wells completed 3
Abandoned 3
MANVEL—BRAZORIA COUNTY
Belcher, The Texas Co. 2 90
MOSS BLUFF—LIBERTY COUNTY
Sterling, Humble O. & R. Co. 9 ..... abd
Sergeant, Texas Gulf Sulphur Co. 3.... abd
McFaddin, Texas Gulf Sulphur Co. 8... abd

Wells completed 3
Abandoned 3
PIERCE JUNCTION—HARRIS COUNTY
Cain, Gulf Prod. Co. 9 500
Hooks, Humble O. & R. Co. 1 100
Dooley, Navarro Oil Co. 16 60
Settegast, Rio Bravo Oil Co. 21-A..... 300
Settegast, Rio Bravo Oil Co. 23-A..... 960

Wells completed 5
Production 1920
REFUGIO—REFUGIO COUNTY
Mitchell, United Prod. Corp. 4 50
SARATOGA—HARDIN COUNTY
"B," Rio Bravo Oil Co. 129-A..... 73
"B," Rio Bravo Oil Co. 130-A..... 54
"B," Rio Bravo Oil Co. 131-A..... 10

Wells completed 3
Production 137
MISCELLANEOUS—TEXAS
Harris County—
Middleton Sur., Lobit, Given et al 1.... abd
Jefferson County—
Yoakum Sur., West, Westbury Oil 4... abd
Trinity County—
Cameron, Mound Prairie Oil Co. 1..... abd
Wharton County—
S.A.M.G. Sur., Sec. 13, Peter Hahn, Barnes & Alexander 1 ..... abd

Wells completed 4
Abandoned 4
SOUTH LOUISIANA
EAST HACKBERRY—CAMERON PARISH
Unsurveyed island, Calcasieu Oil Co. 1..2200
Gulf land (Humble lease), Union Sulphur Co. 1 1400

Wells completed 2
Production 3600
JENNINGS—ACADIA PARISH
Housierre-Latrielle, Yount Lee Oil 10.. abd
LAKE PELTO—TERREBONNE PARISH
State, The Texas Co. 5 ..... abd
PORT BARRE—ST. LANDRY PARISH
Wilson & Cockran, Gulf Ref. Co. 1 825
MISCELLANEOUS—LOUISIANA
IBERIA PARISH
Jeff. Island—Lake Peigneur, Jeff. Lake Oil Co. 28 ..... abd
Jeff. Island—Lake Peigneur, Jeff. Lake Oil Co. 29 ..... abd

Wells completed 2
Abandoned 2

NORTH LOUISIANA

Summary of Field Operations

	Comp.	Prod.	Dry	Gas*	Rigs.	Dlg.	Ttl.
Avoyelles	0	0	0	0	1	0	1
Bossier	3	10	1	1	0	1	1
Caddo	1	0	0	1	1	2	3
Caldwell	0	0	0	0	0	2	2
Catahoula	0	0	0	0	0	1	1
DeSoto	1	0	1	0	1	3	4
Grant	0	0	0	0	1	0	1
Morehouse	1	0	0	1	0	1	1
Natchitoches	3	0	2	1	2	2	4
Ouachita	1	0	0	1	1	1	2
Red River	0	0	0	0	0	1	1
Richland	0	0	0	0	0	1	1
Sabine	13	560	9	0	27	23	50
Tensas	0	0	0	0	0	1	1
Union	0	0	0	0	0	1	1
Webster	0	0	0	0	0	1	1
Total Mar.	23	570	13	5	34	41	75
Total Feb.	15	1,110	9	1	17	50	67
Difference	8	540	4	4	17	9	8

*Gas production: Bossier, 6,000,000 feet; Caddo, 3,500,000 feet; Morehouse, 6,500,000 feet; Natchitoches, 3,000,000 feet; Ouachita, 2,000,000 feet; total, 21,000,000 feet.

NORTH LOUISIANA
WELLS COMPLETED
BOSSIER PARISH
23-19-11 Strange, H. I. Morgan 1..... gas
15-22-14 Nattin, Plain Dealing Oil 1.... 10
7-22-12 Nuckolls, Triangle Drlg. Co. 1. dry

Wells completed 3
Production 10
Dry 1
Gas 1
Gas production 6,000,000
CADDO PARISH
8-16-16 Hudson, Calatex O. & G. Co. 1. gas

Wells completed 1
Gas 1
Gas production 3,500,000
DE SOTO PARISH
12-11-16 Gannon hrs., Rellitt Oil Co. 1.. dry
MOREHOUSE PARISH
9-20-4e Fee, Southern Carbon Co. 57.. gas

Wells completed 1
Gas 1
Gas production 6,500,000
NATCHITOCHES PARISH
32-11-10 Cooper, Cooper et al 2-A..... dry
11-10- 8 Smith, H. S. Gerson 2..... gas
29-11-10 Talley, C. M. Talley et al 1.. dry

Wells completed 3
Dry 2
Gas 1
Gas production 3,000,000
OUACHITA PARISH
11-18-4e Robinson-Reid, J. J. Potts, agt. 1 ..... gas

Wells completed 1
Gas 1
Gas production 2,000,000

SABINE PARISH

11- 7-11 Quayhaglen, L. F. Bahan 1.... 100
14- 7-11 McNeely, Baird & Stone 1..... 240
12- 7-11 Byrd, Crescent Drlg. Co. 2..... 35
12- 7-11 Byrd, Crescent Drlg. Co. 3..... dry
14- 7-11 McNeely, W. F. Lacey 2..... dry
3- 7-12 Bowman-Hicks, Ohio Oil Co. 14 dry
35- 8-12 Bowman-Hicks, Ohio Oil Co. 9.. dry
7- 7-10 Gardner, Service Drlg. & Royalties Co. 1-B..... dry
1- 7-13 Hall, Smith et al 1..... dry
36- 8-13 Mansfield Hardwood Lbr. Co., Southland Drlg. Co. 1..... 185
11- 7-13 F. Martines, Southland Drlg. 1 dry
2- 7-13 Patterson, Southland Drlg. 1.. dry
10- 7-13 Grauque, The Texas Co. 1-B.. dry
8- 8-13 Edwards est., A. H. Thames.. abd

Production 560

ARKANSAS FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry Gas	Rgs.	Dlg.	Ttl.
Clay	0	0	0	0	1	1
Cleburne	0	0	0	0	1	1
Cleveland	0	0	0	1	0	1
Columbia	0	0	0	0	1	1
Dallas	0	0	0	1	1	2
Drew	0	0	0	0	1	1
Hot Springs	0	0	0	0	1	1
Lawrence	0	0	0	1	0	1
Lincoln	0	0	0	0	1	1
Loanoke	0	0	0	0	1	1
Logan	0	0	0	0	1	1
Miller	0	0	0	0	1	1
Ouachita	0	0	0	0	2	2
Pike	0	0	0	0	2	2
Prairie	0	0	0	1	0	1
Scott	0	0	0	0	2	2
Sevier	0	0	0	0	1	1
St. Francis	0	0	0	0	1	1
Union	1	35	0	0	4	9 13
Van Buren	0	0	0	0	1	1
Washington	0	0	0	0	1	1
Yell	0	0	0	0	1	1
Ttl. Mar.	1	35	0	0	8	30 38
Ttl. Feb.	1	0	1	0	7	27 36
Difference	0	35	1	0	1	3 2

WELLS COMPLETED
UNION COUNTY

31-17-15 Anderson, Ark. O. & G. 1-A... 35

MISSISSIPPI

Summary of Field Operations

	Comp.	Prod.	Dry Gas	*Rgs.	Dlg.	Ttl.
Hinds	3	0	0	3	2	3 5
Jasper	0	0	0	0	0	1 1
Lowndes	0	0	0	0	1	0 1
Newton	0	0	0	0	0	1 1
Noxubee	0	0	0	0	0	1 1
Rankin	4	0	0	4	3	3 6
Scott	0	0	0	0	1	0 1
Sharkey	0	0	0	0	0	1 1
Warren	0	0	0	0	0	1 1
Ttl. Mar.	7	0	0	7	7	11 18
Ttl. Feb.	5	0	2	3	10	12 22
Difference	2	0	2	4	3	1 4

*Gas production: Hinds, 60,000,000 feet; Rankin, 154,000,000 feet; total, 214,000,000 feet.

WELLS COMPLETED
HINDS COUNTY

34-6n-1e Cruse, Ferguson-Fuller et al 1 gas
2-5n-1e Interior Lbr. Co., Love Pet. 1. gas
23-6n-1e Wilson, Southern Pet. Co. 1... gas

Wells completed 3
Gas 3
Gas production 60,000,000

RANKIN COUNTY

1-5n-1e Ridge & McGehee, James Alexander, tr. 1 ..... gas
13-5n-1e Ivey, Cummings & Montgomery I, loc. ..... abd
14-5n-1e Tanner, Henslee et al 1..... gas
12-5n-1e Strawder, Meredith et al 1... gas
14-5n-1e Cotton, Muse & Muse 1..... gas

Wells completed 4
Gas 4
Gas production 154,000,000
Abandoned 1

ROCKY MOUNTAIN AREA

MONTANA
Summary of Field Operations

County—	Comp.	Prod.	Dry Gas	Rigs	Drlg.	Ttl.
Carbon	0	0	0	0	2	8 10
Cascade	0	0	0	0	0	3 3
Fergus	0	0	0	0	0	2 2
Glacier	0	0	0	0	2	4 6
Hill	0	0	0	0	0	2 2
Liberty	0	0	0	0	1	5 6
Pondera	0	0	0	0	2	2 4
Teton	0	0	0	0	0	4 4
Toole	0	0	0	0	5	4 9
Miscellaneous	0	0	0	0	1	17 18
Total Mar.	0	0	0	0	13	51 64
Total Feb.	2	60	1	0	14	47 61
Difference	2	60	1	0	1	4 3

COLORADO
Summary of Field Operations

County—	Comp.	Prod.	Dry Gas	Rigs	Drlg.	Ttl.
Arapahoe	0	0	0	0	2	2
Boulder	0	0	0	0	4	4
Elbert	0	0	0	0	3	3
Fremont	0	0	0	0	5	5
La Plata	0	0	0	1	3	4
Larimer	0	0	0	1	12	13
Las Animas	0	0	0	1	2	3
Moffat	0	0	0	2	3	5
Morgan	0	0	0	0	3	1 4
Rio Blanco	0	0	0	0	0	4 4
Routt	0	0	0	0	1	2 3
Weld	2	27	1	0	1	4 5
Miscellaneous	0	0	0	0	0	25 25
Total Mar.	2	27	1	0	10	70 80
Total Feb.	3	30	2	0	10	70 80
Difference	1	3	1	0	0	0 0

WELLS COMPLETED

25-6n-61 Gadbois, Greeley Oil Co. 1 .... dry
24-6n-61 Gadbois, Continental Oil Co. 1 27

Wells completed 2
Production 27

WYOMING
Summary of Field Operations

County—	Comp.	Prod.	Dry Gas	Rigs	Drlg.	Ttl.
Big Horn	0	0	0	0	3	3
Carbon	0	0	0	1	6	7
Fremont	0	0	0	2	2	4
Hot Springs	0	0	0	0	2	2
Natrona	0	0	0	3	5	8
Park	1	610	0	0	2	6 8
Sweetwater	0	0	0	0	2	5 7
Sublet	0	0	0	0	0	7 7
Uinta	0	0	0	0	0	6 6
Weston	1	300	0	0	0	12 12
Miscellaneous	0	0	0	0	0	8 8
Total Mar.	2	910	0	0	10	62 72
Total Feb.	4	5	3	0	12	62 74
Difference	2	905	3	0	2	0 2

WELLS COMPLETED

15-46-64 West Osage Oil Co. 2 300
26-58-98 Rosenberg, Midwest Ref. Co. 4 610

Wells completed 2
Production 910

NEW MEXICO
Summary of Field Operations

County—	Comp.	Prod.	Dry Gas	Rigs	Drlg.	Ttl.
De Baca	0	0	0	0	2	2
Eddy	2	60	0	1	4	5
Lea	2	25,146	0	3	3	6
McKinley	0	0	0	1	5	6
Rio Arriba	0	0	0	0	3	3
San Juan	0	0	0	1	6	7
San Miguel	0	0	0	0	5	5
Miscellaneous	0	0	0	2	15	17
Total Mar.	4	25,206	0	8	43	51
Total Feb.	3	14,761	1	1	8	46 54
Difference	1	10,445	1	1	0	3 3

WELLS COMPLETED

33-18-38 State, Continental Oil Co. 6-B 22,939
3-19-38 Byers, Midwest Ref. Co. 8.. 2,207
32-18-28 State, Flynn, Welch & Yates 61 25
8-18-27 Compton, R. D. Compton 1.. 25

Wells completed 4
Production 25,206

UTAH
Summary of Field Operations

	Comp.	Prod.	Dry Gas	Rigs	Drlg.	Ttl.
Total Mar.	0	0	0	0	1	19 20
Total Feb.	0	0	0	0	1	19 20
Difference	0	0	0	0	0	0 0

EASTERN FIELDS

Summary of Completed Work

Field—	Comp.	Prod.	Dry Gas
Allegany	12	131	0 0
Bradford	44	204	0 0
Venango-Clarion	6	6	0 2
Butler-Armstrong	1	3	0 0
Middle Field	1	2	0 0
Tioga-Wayne	5	0	5 0
Southwest Pennsylvania	8	3	5 2
Southeast Ohio	19	87	8 1
West Virginia	17	17	3 12
Total Mar.	113	453	21 17
Total Feb.	133	576	21 37
Difference	20	123	0 20

Summary of Work Under Way

Field—	Rigs	Drg.	Ttl.
Allegany	1	7	8
Bradford	13	20	33
Venango-Clarion	1	5	6
Butler-Armstrong	0	3	3
Middle Field	0	2	2
Tioga-Wayne	5	26	31
Southwest Pennsylvania	3	6	9
Southeast Ohio	10	18	28
West Virginia	24	28	52
Total March	57	115	172
Total February	41	135	176
Difference	16	20	4

WELLS COMPLETED
ALLEGANY

Kinley, Pure Penn Oil, Inc. 1
Fee, Arthur F. Blanchard 1
Lippert, C. M. Lippert et al 2
Fee, Miller Bros. et al 1
Herrick & Shaner, N.V.V. Franchot 60
Herrick & Shaner, N.V.V. Franchot 60
Herrick & Shaner, N.V.V. Franchot 5
Ames, O. A. Eastman et al ..... pressure
Fee, Forest Oil Corp. 1
Fee, Forest Oil Corp. ..... pressure
Fee, Forest Oil Corp. ..... pressure
Fee, Forest Oil Corp. ..... pressure

Wells completed 12
Production 131
Pressure 4

BRADFORD

Fee, Mix Creek Oil Co. ..... pressure
Fee, E. D. Kepner Oil Co. ..... pressure
Fee, Forest Oil Corp. 1
Fee, Forest Oil Corp. 1
Fee, Forest Oil Corp. 1
Fee, Forest Oil Corp. 1
Fee, Forest Petroleum Corp. 1
Fee, Forest Pet. Co. (6 wells) ..... pressure
Bingham 269, Andrus & MacDowell 135.. 2
Bingham 380, Rew Oil Co. 65 2
Bingham 371, Lane No. 1 et al 1
Fee, Dallas Oil Co. ..... pressure
Cram, Minard Run Oil Co. ..... pressure
DeGolia, Healey Pet. Co. 7
DeGolia, Healey Pet. Co. 8
Quintuple, McKean Producing Co. 2
Mullhaupt, W. E. Burdick 2
Fee, Olean Pet. Co. 10
Hunt, Healey Pet. Corp. 1
Melvin, South Penn Oil Co. 1
Artley, Bradford Prod. Co., Inc. ..... pressure
Mitchell, Bradford Prod. Co., Inc. 1
Willet, Sloan & Zook Pet. Co. ..... pressure
Harter, Bradford Prod. Co., Inc. 1
Borden, T. P. Thompson, Jr. 1
Duke, Sloan & Zook Oil Co. 1 3
Quintuple, Healey Pet. Corp. 1
Quintuple, Myron Matson ..... pressure
Fee, HeHaley Pet. Corp. 5
Burdick, South Penn Oil Co. ..... pressure
Fee, Indian Creek Oil Co. 3
Fee, Sloan & Zook Prod. Co. 5
Fee, Sloan & Zook Prod. Co. 10
Fee, Sloan & Zook Prod. Co. 15
Franchot, Bradford Prod. Co. ,Inc. 50
Fee, Bradford Prod. Co., Inc. 60
Cram, Minard Run Oil Co. 4
Cram, Minard Run Oil Co. 4
Cram, Minard Run Oil Co. ..... pressure

Wells completed 44
Production 204
Pressure 15

VENANGO-CLARION

Watson, Moses Karien 6 1
West, J. M. West, Jr., 12 1
Kenemuth, Alum Rock Gas Co. 4 1
Jerusalem, O. H. Culbertson 11 3
Sprore, Fryburg Motor Co. 3 ..... gas
Anderson, United Nat. Gas Co. 4,032.... gas

Wells completed 6
Production 6
Gas 2

BUTLER-ARMSTRONG

Ripper, Willis M. Ruby 2 3

Wells completed 1
Production 3

MIDDLE FIELD

Scio, C. A. Duke estate 2

Wells completed 1
Production 2

TIOGA-WAYNE

Dickinson, York-Penn Co. ..... dry
Mittendorf, Scheilheimer et al ..... dry
Croft, Universal Oil & Gas Co. ..... dry
Stage, John W. Payne ..... dry
Myers, Schrack et al ..... dry

Wells completed 5
Dry 5

SOUTHWEST PENNSYLVANIA

WELLS COMPLETED
ALLEGHENY COUNTY

Berg, Swain & Co. 1 3

GREENE COUNTY

Sterling, Scheidler Johnson Co. 1 ..... gas

WASHINGTON COUNTY

Woodruff, Local Co. 1 ..... dry
Seik, Henry Seik 1 ..... dry
Brown, William Dalimeyer 1 ..... dry
Noble, Hopewel Oil & Gas Co. 1 ..... dry
J. B. Smith, Union Gasoline & Oil Co. 1 dry
Pants, Carnegie Nat. Gas Co. 1 ..... gas

SOUTHEAST OHIO

WELLS COMPLETED
ASHLAND COUNTY

Horn, A. G. Tabott et al 5 ..... dry

ATHENS COUNTY

Jones, Ohio Oil & Gas Co. 3 ..... dry
Young, Standard Nat. Gas Co. 1 4

HOLMES COUNTY

Johnson, Lydic Oil & Gas Co. et al 1 .. 3

LICKING COUNTY

Barcus, Emerald Pet. Co. et al 1 6

MEDINA COUNTY

Essig, Oko Oil & Gas Co. 53 10
Franks, E. R. Edson & Son Co. 35 .. dry
Packard, Preston Oil Co. 2 30
Packard, E. R. Edson & Son Co. 34 5
Franks, E. R. Edson & Son Co. 36 .... dry

MONROE COUNTY

Schlabach, J. Crawford et al 3 ..... dry

MORGAN COUNTY

Orndoff, E. S. Peppel et al 1 ..... dry

MUSKINGUM COUNTY

Morrison, Atha Oil Co. 1 20

NOBLE COUNTY

Springer, Metcalf and Johnson 2 1

PERRY COUNTY

McTague heirs, E. W. English et al 1 .. dry
Snyder, Pure Oil Co. 1 5
Frazier, Atha Oil Co. 1 ..... dry
Deaver heirs, Mid-East Gas Co. 1 ..... gas

WASHINGTON COUNTY

Piatt, First Nat. Bank of New Matamoras, Account No. 7, 2 3

WEST VIRGINIA
WELLS COMPLETED
BOONE COUNTY

Federal Coal Co., Godfrey L. Cabot 51.. gas
Central Trust Co., Godfrey L. Cabot 2.. gas
Covert, C. P. Jones 2 ..... gas

CABELL COUNTY

Stanley, C. C. Wolfe 1 ..... gas

CALHOUN COUNTY

Wood, Harley Ferrall et al 1 10
Evans, Warner Drilling Co. 1 ..... gas
Evans, Ed Hess et al 1 4 ..... gas

FAYETTE COUNTY

New River Coal Co., Montgomery Gas Co. 1 ..... dry

JACKSON COUNTY

Cole, Jerk Water Oil Co. 1 ..... dry

MASON COUNTY

Jackson, Berea Oil & Gas Corp. 2 7

NICHOLS COUNTY

Craig heirs, Hamilton Gas Co. 33 ..... gas

PLEASANTS COUNTY

Kerr, Allen Holdren et al 24 ..... dry
Thorne, Albert Neely & Co. 1 ..... gas

ROANE COUNTY

Keene, Deeds Oil & Gas Co. 1 ..... gas
T. H. Bee, Jr., Henderson Oil Co. 1 .... gas

WETZEL COUNTY

Ashcraft, Pgh. & W. Va. Gas Co. 11 ... gas

WOOD COUNTY

Bickel, W. H. Bickel 1 ..... gas

CENTRAL OHIO

Summary of Field Operations

	Comp.	Prod.	Dry Gas	Rigs	Drlg.	Ttl.
Ashland	2	0	1	1	1	2
Lorain	1	0	0	1	2	1 3
Medina	8	78	5	0	0	3 3
Holmes	1	3	0	0	0	1 1
Cuyahoga	0	0	0	0	0	1 1
Richland	1	0	1	0	0	0 0
Knox	0	0	0	0	0	1 1
Coshocton	0	0	0	0	2	1 1
Summitt	1	0	0	1	0	5 5
Licking	4	55	1	0	0	3 3
Muskingum	3	15	2	0	3	6 9
Athens	4	4	3	0	2	4 6
Tuscarawas	0	0	0	0	2	0 2
Stark	10	0	1	0	5	18 23
Fairfield	2	0	1	1	0	1 1
Guernsey	2	0	2	0	2	4 6
Belmont	0	0	0	0	2	3 5
Gallia	0	0	0	0	0	1 1
Scioto	0	0	0	0	0	2 2
Pike	0	0	0	0	0	2 2
Carroll	0	0	0	0	0	4 4
Columbiana	0	0	0	0	0	1 1
Crawford	0	0	0	0	0	1 1
Total Mar.	39	155	17	13	21	64 85
Total Feb.	35	160	14	17	23	72 95
Difference	4	5	3	4	2	8 10

WELLS COMPLETED
ASHLAND COUNTY

Jackson — Oratta Bennett, Commonwealth Gas Corp. 1 ..... dry
C. R. Keener, Ohio Fuel Gas 1,5,638.. gas

Wells completed 2
Dry 1

LORAIN COUNTY

Grafton—Frank Stepka, Ohio Fuel Gas 2-5,633 ..... gas

MEDINA COUNTY

Chatham—M. H. Packard, Preston Oil 2-1,512 48
Henry Essig, Oko Oil & Gas 24 15
Geo. W. Packard, Edson Sons Co. 33. dry
Geo. W. Packard, Edson Sons Co. 34. 15
Marcus A. Frank, Edson Sons Co. 37 and 38 ..... dry
Homer —Jas. Garman, Ohio Fuel Gas 3-5,580 ..... dry
Harrisville—Jos. Funk, Barnhart & Co. 8 dry

Wells completed 8
Production 78
Dry 5

HOLMES COUNTY

Monroe—Andrew Johnson, Paint Valley Oil & Gas 1 ..... dry

RICHLAND COUNTY

Jefferson—Angeline Cates, Commonwealth Gas Corp. 1 ..... dry

SUMMITT COUNTY

Green—Chas. A. Smith, Smith & Co. 1 gas

LICKING COUNTY

Fallsburg—Sid Tarlton, Emerald Pet. 2 45
Homer Barcus, Emerald Pet. 1 6
Perry—Nellie Smith, Settles Oil 5 4
Franklin—J. L. Motherspaw, Armstrong & Lyttle 5 ..... dry

Wells completed 4
Production 55
Dry 1

MUSKINGUM COUNTY

Brush Creek—Carrie Stake, Ohio Fuel Gas 2-5,637 ..... dry
Scott-Hammond, Pure Oil 1 ..... dry
Union—J. S. Morrison, Atha Co. 1 15

Wells completed 3
Production 15
Dry 2

ATHENS COUNTY

Alexander—M. Jones, Ohio Oil & Gas 5 dry
Berne—Gertrude Shurick, Ohio Fuel Gas 2-5,630 ..... dry
Cannan—Roy C. Caskins, Ohio Fuel Gas 1-5,639 ..... dry
Waterloo—J. R. Young, Standard Natural Gas 1 4

Wells completed 4
Production 4
Dry 3

STARK COUNTY

Jackson—Balser Race, Ohio Fuel Gas 1-5,598 ..... gas
Elizabeth Harmount, Ohio Fuel Gas 1-5,602 ..... gas
Jas. H. Friedman, Ohio Fuel Gas 1-5,601 ..... gas
Henry W. Stockert, Ohio Fuel Gas 2-5,608 ..... gas
Howard B. Fawcett, East Ohio Gas 3 gas
J. C. Steiner, Brendall & Co. 4 ..... gas
Emma P. Smith, Brendall & Co. 1.. gas
J. W. Hines, Brendall & Co. 1 ..... gas
H. A. Huthmacher, Brendall & Co. 1. gas
Lawrence—Mary A. Ginther, East Ohio Gas 1 ..... dry

Wells completed 10
Dry 1
Gas 9

FAIRFIELD COUNTY

Pleasants—C. W. Moyer, City Nat. Gas Works 3 ..... dry
Richland, Wm. M. Kerr, City Nat. Gas Works 1 ..... gas

Wells completed 2
Dry 1
Gas 1

GUERNSEY COUNTY

Cambridge—W. F. and Anna M. Dixon, Charles Smith 1 ..... dry
Westland—Besse Taylor, C. C. Wharton 3 ..... dry

Wells completed 2
Dry 2

KENTUCKY FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Ohio	2	35	1	0	0	7	7
Daviess	8	135	2	1	1	4	5
Hancock	1	6	0	0	2	9	11
Barren	1	30	0	0	0	1	1
McLean	2	0	2	0	5	7	12
Hart	14	515	1	7	0	12	12
Muhlenberg	2	15	1	0	0	0	0
Greene	0	0	0	0	0	1	2
Henderson	3	47	0	0	0	1	1
Webster	4	0	0	4	0	2	2
Edmonson	3	55	0	0	0	1	1
Todd	0	0	0	0	0	1	1
Nelson	0	0	0	0	0	1	1
Taylor	0	0	0	0	0	1	1
Cumberland	1	50	0	0	0	1	1
Madison	0	0	0	0	0	1	1
Bath	0	0	0	0	0	1	1
Breckenridge	0	0	0	0	0	1	1
Christian	0	0	0	0	0	5	5
Hopkins	0	0	0	0	0	3	3
Grayson	0	0	0	0	0	1	1
Boyle	0	0	0	0	0	1	1
Total Mar.	41	888	7	12	9	62	71
Total Feb.	19	540	5	4	7	63	70
Difference	22	348	2	8	2	1	1

WELLS COMPLETED
OHIO COUNTY

Hartford—Dave Brooks, Cumberland Pet. 5 35
Otto Farmer, Cumberland Pet. 1 .... dry

Wells completed 2
Production 35
Dry 1

DAVIESS COUNTY

Owensboro—J. C. and M. Alsip, Mecca Oil 4 30
Zula Johnson, Mecca Oil 7 ..... dry
Ellis Morrison, McDonald & Co. 1 .. gas
Burton, Wade & Moore 1 25
H. O. Neel, 75-a., S. H. Russell 2 .. 30
W. E. Ivie, Cumberland-Kemrow Co. 1 40
Massie Bros., Miller & Co. 1 ..... dry
Chas. Bell, Frank Cox & Co. 3 10

Wells completed 8
Production 135
Dry 2
Gas 1

HANCOCK COUNTY

Pellville—Ollie Bolling 90ac., D. T. Bolling 2 6

BARREN COUNTY

Glasgow—Ben Shipley, Lynne Knapp & Co. 1 30

McLEAN COUNTY

Calhoun—W. E. Lynn, Ohio Oil 1 ..... dry
Hardin hrs., Cameron-Thompson & Co. 1 ..... dry

Wells completed 2
Dry 2

HART COUNTY

Horse Cave—Green River Island, Treasury Island O. & G. 1 ..... gas
Geralds, unknown parties 1 60
Jess Puckett, unknown parties 2..... 80
Bonneville—Mag Finley, H. Z. Clark & Co. 1 200
M. G. Finley, unknown parties 1 .... gas
E. E. Gibson, unknown parties 1 .... gas
Tommy Johnson, unknown parties 1 .. 50
Willie Johnson, unknown parties 1 .. dry
Widow Johnson, unknown parties 1 .. gas
L. G. Finley, unknown parties 1 .... gas
A. L. Finley, Deweese & Co. 1 ..... gas
Albert Hodges, Deweese & Co. 1 .... gas
Sonnie Baumgardner, unknown parties 1 50
Mrs. Emmitt Seymour, Mud Branch O. & G. 1 75

Wells completed 14
Production 515
Dry 1
Gas 7

MUHLENBERG COUNTY

Greenville—L. Cornnette, Ellis & Young 1 15
Elgin Shelton, No. 2, Ohio Oil 1 .... dry

Wells completed 2
Production 15
Dry 1

HENDERSON COUNTY

Niagara—S. A. Freeman, Imperial O. & G. Products 2 20
Jones, Imperial O. & G. Products 2.. 15
Bunch, Imperial O. & G. Products 1.. 12

Wells completed 3
Production 47

WEBSTER COUNTY

Sebree—J. A. Curry, Geo. Christensen 2. gas
J. E. Thornberry, Garrison & Baker 2 gas
Lilburn Allen, Garrison & Koker 1 .. gas
Emil Sellers, Iley B. Browning 1 ... gas

Wells completed 4
Gas 4

EDMONSON COUNTY

Brownsville—Rock Hill, I. M. Murphy 1 20
Rock Hill, I. M. Murphy 2 15
Rock Hill, I. M. Murphy 3 20

Wells completed 3
Production 55

CUMBERLAND COUNTY

Burkesville—Wint Cook, Wilcox Bros. 1 50

LIMA FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.	Ttl.
Seneca	4	100	0	3	0	6	6
Lucas	1	5	0	0	1	3	4
Ottawa	0	0	0	0	0	1	1
Hardin	1	4	0	0	0	1	1
Shelby	2	1	1	0	0	0	0
Darke	0	0	0	0	0	1	1
Putnam	1	0	1	0	0	0	0
Wyandot	1	0	0	1	2	3	5
Total Mar.	10	110	2	4	3	15	18
Total Feb.	8	7	2	3	4	16	20
Difference	2	103	0	1	1	1	2

WELLS COMPLETED
WOOD COUNTY

Ross—S. Radcliff 10-ac., Ohio Oil 1 ... abd
Bloom—Northwestern Gas Co., Ohio Oil 17 ..... abd
Liberty—E. B. Phillips, Ohio Oil 28, 40. abd
D. Deshelter, Ohio Oil 1, 4, 6, 9..... abd
Chas. Mercer, Ohio Oil 9, 12..... abd
Julia Sterling, Ohio Oil 1 ..... abd

Abandoned 11

HANCOCK COUNTY

Allen—Jos. Crites, Ohio Oil 6, 7, 8, 9, 12 abd

Abandoned 5

SANDUSKY COUNTY

Scott—Michael Putnam, Onsel Bros. 1, 2, 3, 4 ..... abd

Abandoned 4

SENECA COUNTY

Hopewell—Mary Getuldig, J. H. Murphy & Sons 3 100
Frank Feasel, Tiffin Industrial Gas 2 gas
Lloyd Hoover, Sandusky Gas Co. 1 .. gas
Frank Fox, McPherson & Co. 1 ..... gas

Wells completed 4
Production 100
Gas 3

LUCAS COUNTY

Monclova—H. A. Goldbrath, Dillon & McFrederick 1 5

HARDIN COUNTY

Cessna—A. W. Kritzler, Commonwealth Gas Corp. 3 4

SHELBY COUNTY

Cynthian—F. J. Borcher, Ellerman Oil 2 1
Wm. Borhorst, Rucker Oil 1 ..... dry

Wells completed 2
Production 1
Dry 1

PUTNAM COUNTY

Cloverdale—Wm. Sangebush, unknown 1 dry
WYANDOT COUNTY
Ridge—S. O. Smith, R. W. Kirk & Co. 1 gas

INDIANA FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rgs.	Dlg.	Ttl.
Gibson	3	240	1	0	0	4	4
Pike	0	0	0	0	0	2	2
Daviess	0	0	0	0	0	6	6
Warrick	0	0	0	0	0	1	1
Sullivan	1	0	0	1	0	4	4
Spencer	2	0	2	0	1	6	7
Perry	1	0	1	0	0	4	4
Knox	0	0	0	0	0	5	5
Marshall	0	0	0	0	1	1	2
Lagrange	0	0	0	0	0	1	1
Putnam	0	0	0	0	0	1	1
Posey	0	0	0	0	0	1	1
Laporte	0	0	0	0	0	1	1
Dubois	0	0	0	0	0	2	2
Harrison	0	0	0	0	0	3	3
Dearborn	0	0	0	0	0	1	1
Hamilton	0	0	0	0	0	2	2
Crawford	0	0	0	0	0	1	1
Greene	0	0	0	0	0	3	3
Switzerland	0	0	0	0	0	2	2
St. Joe	0	0	0	0	0	1	1
Rush	0	0	0	0	0	2	2
DeKalb	0	0	0	0	0	1	1
Pulaski	0	0	0	0	0	1	1
Elkhart	0	0	0	0	0	1	1
Fountain	0	0	0	0	0	1	1
Orange	0	0	0	0	0	1	1
Hendricks	1	0	1	0	0	0	0
Franklin	1	0	1	0	0	0	0
Hancock	0	0	0	0	0	1	1
Ripley	1	0	1	0	0	0	0
Total Mar.	10	240	7	1	2	60	62
Total Feb.	11	155	6	3	2	59	61
Difference	1	85	1	2	0	1	1

INDIANA FIELDS
WELLS COMPLETED
GIBSON COUNTY

Washington—Agnes Haskins, Glb Van Oil 4 190
Lottie Hope, Big Four O. & G. 2 ... 50
H. L. Gaston, R. J. Rendall & Co. 1. dry
PIKE COUNTY
Madison—Sarah J. Thomas, Ohio Oil 10. abd
SULLIVAN COUNTY
Curry—Dalphia Sludder, Pierson & Co. 1 gas
SPENCER COUNTY
Huff—Gus Sauter, Steffy & Grass 1.... dry
J. Phillips, Medley Bros. 1 ..... dry

Wells completed 2
Dry 2

PERRY COUNTY

Clark—Wm. Dotson, W. S. M. Hughes & Co. 1 ..... dry
HENDRICKS COUNTY
Liberty—T. A. Reitzel, French Development Corp. 1 ..... dry
FRANKLIN COUNTY
Brookville—Hike Kunz, American Industrial Gas Corp. 1 ..... dry
RIPLEY COUNTY
Laughety—H. Siebert, American Industrial Gas Corp. 1 ..... dry

ILLINOIS FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Clark	0	0	0	0	0	3	3
Coles	0	0	0	0	0	1	1
Edgar	0	0	0	0	0	1	1
Crawford	2	15	1	0	1	3	4
St. Clair	0	0	0	0	0	1	1
Randolph	0	0	0	0	0	2	2
Monroe	0	0	0	0	0	2	2
Washington	0	0	0	0	0	1	1
Boone	0	0	0	0	0	1	1
Madison	0	0	0	0	0	2	2
Jefferson	0	0	0	0	0	1	1
Jasper	0	0	0	0	0	1	1
Marion	0	0	0	0	0	1	1
Bond	1	0	0	1	0	0	0
Total Mar.	3	15	1	1	1	20	21
Total Feb.	2	10	1	0	1	18	19
Difference	1	5	0	1	0	2	2

WELLS COMPLETED
CRAWFORD COUNTY

Montgomery—W. F. Wesner, W. C. McBride, Inc. 2 15
Lamotte—M. J. and J. A. Shaw, R. Linkenfelter 1 ..... dry

Wells completed 2
Production 15
Dry 1

LAWRENCE COUNTY

Bridgeport—Ellen Lutz No. 2, Big Four O. & G. 2 ..... abd
Dennison—Rebecca Gould, Ohio Oil 11.. abd
E. J. Seed, Big Four O. & G. 30..... abd
Petty—Albert Westall, Ohio Oil 7..... abd

Abandoned 4

BOND COUNTY

Legrand—J. C. Merry, Bond County Gas Co. 1 ..... gas

MICHIGAN FIELDS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Muskegon	0	0	0	0	0	1	1
Isabella	0	0	0	0	16	28	44
Midland	4	4,015	0	0	9	25	34
Clare	1	0	1	0	1	2	3
Lake	0	0	0	0	0	2	2
Cass	0	0	0	0	0	2	2
Kent	0	0	0	0	1	2	3
Monroe	1	0	1	0	1	0	1
Oceana	0	0	0	0	2	5	7
Emmett	0	0	0	0	0	1	1
Eaton	0	0	0	0	1	0	1
Iosco	0	0	0	0	2	0	2
Lenawee	1	0	1	0	0	0	0
Washtenaw	1	0	1	0	0	0	0
Ogemaw	0	0	0	0	0	1	1
Montmorency	0	0	0	0	3	0	3
Sanilac	0	0	0	0	3	0	3
Leelanau	0	0	0	0	1	0	1
Gratiot	0	0	0	0	2	0	2
Shiawassee	0	0	0	0	2	2	4
Allegan	0	0	0	0	0	4	4
Osceola	0	0	0	0	2	0	2
St. Clair	0	0	0	0	1	0	1
Alpena	0	0	0	0	1	0	1
Cheboygan	0	0	0	0	0	1	1
Kalamazoo	0	0	0	0	0	1	1
Oakland	0	0	0	0	0	1	1
Newygo	0	0	0	0	0	1	1
Saginaw	0	0	0	0	1	0	1
Gennessee	0	0	0	0	1	0	1
Total Mar.	8	4,015	4	0	50	79	129
Total Feb.	7	20	5	1	55	80	135
Difference	1	3,995	1	1	5	1	6

COMPLETED WELLS
MIDLAND COUNTY

Greendale—A. G. Struble, W. L. McClanahan, Inc. 3 1000
Bathan-Kidder, Pure Oil 1 1890
Ed Barnard, Pure Oil 1 1000
F. Sias, Pure Oil 6 125

Wells completed 4
Production 4015

CLARE COUNTY

Hatton—Bothwell, Mammoth Pet. 1 ... dry
MONROE COUNTY
London—Nachtengale, Monroe Oil & Gas 1 ..... dry
LENAWEE COUNTY
Ridgeway—S. E. Lawrence, Graber & Co. 1 ..... dry
WASHTENAW COUNTY
Ypsilanti—Atkinson, Monroe Oil & Gas 1 dry

R. E. WILLIAMS DIES

CHATHAM, Ontario, Apr. 16.—Roy Edward Williams, presdient and managing director of Fabyan Petroleums, Ltd., died recently at Vancouver, British Columbia. Mr. Williams was active for some years in the development of the Wainwright Field.

JOHN A. VILES DIES

John A. Viles, well known geologist, passed away at his home in Farmington, N. Mex., after a short illness believed to be due to a blood clot on the brain. He went into the San Juan country 10 years ago from Los Angeles, Calif., and was active in the discovery and development of structures in that area. He is credited with locating the Kutz Canon structure which supplies central New Mexico with natural gas.

COMMITTEE NAMED ON PRODUCTION RECORDS

Twenty-one men representing the four principal oil-producing regions of the country have been appointed to membership on the topical committee on standardization of production records and nomenclature as a branch of the American Petroleum Institute central committee on drilling and production practice. Appointments were announced by Chairman Charles F. Roeser of the general committee of production. J. French Robinson, Lycoming Natural Gas Co., Wellsboro, Pa., is national chairman of the new committee. Four district chairmen are: Martin Van Couvering, Los Angeles, Calif., California district; J. G. Montgomery, Jr., United Natural Gas Co., Oil City, Pa., eastern district; F. A. Lichtenheld, Indian Territory Illuminating Oil Co., Bartlesville, Okla., Mid-Continent district; Harold J. Vance, Vance & Fagin, Kilgore, Tex., southwestern district. Others on the committee are:

California district—R. R. Boyd, Richfield Oil Co., Los Angeles; H. A. Brett, Union Oil Co. of California, Santa Fe Springs; J. B. Case, oil and gas supervisor, Los Angeles; J. H. Menke, Standard Oil Co. of California, Los Angeles; Henry West, Shell Oil Co., Long Beach.

Eastern district—C. P. Balsiger, South Penn Oil Co., Bradford, Pa.; Kenneth Cottingham, Columbia Engineering & Management Corp., Columbus, Ohio; T. J. Kirwin, United Fuel Gas Co. Charleston, W. Va.; H. H. Phillips, T. W. Phillips Gas & Oil Co., Butler, Pa.; J. J. Schmidt, East Ohio Gas Co., Cleveland, Ohio.

Mid-Continent district—T. A. Hall, Tidal Oil Co., Tulsa; G. E. Longfellow, Clint-Moore estate, Shidler, Okla.

Southwestern district—David Donahue, Tidal Oil Co., Fort Worth, Tex.; P. S. Haury, Simms Oil Co., Smackover, Ark.; W. C. Shutts, Humble Oil & Refining Co., Houston; Ed Warren, Continental Oil Co., Borger, Tex.

NO STATE CONTROL OVER INTERSTATE GAS LINES

WASHINGTON, D. C., Apr. 18.—The Maryland Public Service Commission has no jurisdiction over a corporation engaged in the interstate transmission of natural gas, according to a decision by the state court of appeals.

The court sustained the ruling of the circuit court of Baltimore City in the case of the commission against the Maryland Gas Transmission Co., in which the commission attempted to compel the company to secure a franchise for its pipe lines through Maryland. The lower court set aside the commission's order.

In the opinion of the court of appeals, written by Judge W. Mitchell Digges, it was pointed out that the gas was high pressure, not intended for sale in Maryland, but for use in Pennsylvania and Virginia. The commission objected to the granting, by owners of public property and the county commissioners of the several counties, of the right to construct pipe lines under public roads.

In the opinion it was held that none of the lines was laid through cities, but that all ran through open country, and that holders of fees in the beds of roads, such as those described in the bill of complaint, were entitled to lay pipes across and under the bends of the roads for any purpose not obstructing the full exercise of the granted easement of way.

WILLIAM N. AGNEW DIES

William Newton Agnew, 56, traffic manager of the Worthington Pump & Machinery Corp., New York, since 1910, and also assistant to the president for the past three years, died suddenly April 12 in his home in the Hotel Woodward, New York. He leaves his wife and a daughter, Mrs. Edith A. Tait. Mr. Agnew was a member of the board of governors of the New York Traffic Club, the Traffic Golf Association and Genesee Lodge, F.&A.M., Flint, Mich. Interment was in Kensico Cemetery, Kensico, N. Y.

Bureau of Mines Statistics for February, 1932

COMPARATIVE ANALYSES
(Thousands of barrels of 42 U. S. gallons)

	Feb., 1932 Total	Feb., 1932 Dly. av.	Jan., 1932 Total	Jan., 1932 Dly. av.	Jan.-Feb., 1932	Jan.-Feb., 1931
CRUDE PETROLEUM:						
Runs to stills: Domestic	60,635	2,091	65,371	2,109	126,006	61,589
Foreign	3,179	110	3,344	108	6,523	3,725
Total	63,814	2,201	68,715	2,217	132,529	65,314
Imports	4,708	162	2,047	66	6,755	4,789
Exports	1,897	65	1,633	53	3,530	1,710
MOTOR FUEL:						
Production	31,764	1,095	33,535	1,082	65,299	31,328
Imports	1,195	41	1,224	39	2,419	948
Exports	2,849	98	3,422	110	6,271	3,606
Stocks	*61,964	...	*57,362	...	*61,964	45,213
Domestic demand	25,508	880	26,845	866	52,353	26,061
KEROSENE:						
Production	3,200	110	3,798	123	6,998	3,171
Imports	4	...	.....	...	4	.....
Exports	739	25	1,214	39	1,953	977
Stocks	4,971	...	5,304	...	4,971	6,477
Domestic demand	2,798	96	2,612	84	5,410	2,272
GAS OIL AND DISTILLATE FUELS:						
Production	5,609	193	6,291	203	11,900	6,517
Stocks	13,623	...	16,059	...	13,623	13,695
RESIDUAL FUEL OILS:						
Production	17,978	620	19,239	621	37,217	19,442
Stocks†	115,817	...	116,901	...	115,817	116,369
LUBRICANTS:						
Production	1,947	67	2,092	67	4,039	2,036
Imports	1	...	3	...	4	2
Exports	599	21	616	20	1,215	557
Stocks	9,777	...	9,478	...	9,777	10,911
Domestic demand	1,050	36	1,512	49	2,562	1,583
WAX (thousands of pounds):						
Production	48,440	1,670	43,680	1,409	92,120	38,640
Imports	8,294	286	4,586	148	12,880	3,035
Exports	17,507	604	22,969	741	40,476	23,503
Stocks	188,688	...	188,476	...	188,688	229,414
Domestic demand	39,015	1,345	17,664	570	56,679	21,802
COKE (short tons):						
Production	141,400	4,876	144,900	4,674	286,300	150,800
Stocks	1,440,300	...	1,460,000	...	1,440,300	1,052,600
ASPHALT (short tons):						
Production	130,000	4,483	131,100	4,229	261,100	165,800
Imports (natural)	1,000	34	1,000	32	2,000	.....
Stocks	313,400	...	308,400	...	313,400	331,500
ROAD OIL:						
Production	88	3	154	5	242	115
Stocks	509	...	460	...	509	340
STILL GAS:						
Production	3,029	104	3,207	103	6,236	‡2,150
MISCELLANEOUS:						
Production	273	9	259	8	532	270
Stocks	749	...	721	...	749	590

*Includes terminal and transit stocks, pipe line stocks and stocks of motor blends held at natural gasoline plants. †Includes heavy crude in California. ‡East of California.

PRODUCTION OF CRUDE PETROLEUM BY STATES
(Thousands of barrels of 42 U. S. gallons)

	Feb., 1932 Total	Feb., 1932 Dly. av.	Jan., 1932 Total	Jan., 1932 Dly. av.	Jan.-Feb., 1932	Jan.-Feb., 1931
Arkansas	960	33	983	32	1,943	2,910
California:						
Kettleman Hills	1,736	60	1,868	60	3,604	1,443
Long Beach	2,360	81	2,415	79	4,775	5,535
Santa Fe Springs	1,920	66	2,024	65	3,944	4,218
Rest of State	8,601	297	9,225	297	17,826	20,221
Total California	14,617	504	15,532	501	30,149	31,417
Colorado	107	4	114	4	221	265
Illinois	415	14	431	14	846	785
Indiana:						
Southwestern	69	2	69	2	138	135
Northeastern	2	...	3	...	5	8
Total Indiana	71	2	72	2	143	143
Kansas	2,736	94	2,954	95	5,690	6,133
Kentucky	470	16	498	16	968	1,070
Louisiana:						
Gulf Coast	782	27	879	29	1,661	1,672
Rest of State	777	27	791	25	1,568	2,433
Total Louisiana	1,559	54	1,670	54	3,229	4,105
Michigan	407	16	471	15	878	504
Montana	209	7	175	6	384	493
New Mexico	1,079	37	1,170	38	2,249	2,272
New York	293	10	322	11	615	559
Ohio:						
Central and eastern	278	9	292	9	570	747
Northwestern	82	3	84	3	166	196
Total Ohio	360	12	376	12	736	943
Oklahoma:						
Oklahoma City	2,883	100	3,739	120	6,622	5,206
Seminole	3,720	128	3,900	126	7,620	9,073
Rest of State	5,875	203	6,160	199	12,035	14,733
Total Oklahoma	12,478	431	13,799	445	26,277	29,012
Pennsylvania	973	33	1,062	34	2,035	1,772
Tennessee	...	...	1	...	1	2
Texas:						
Gulf Coast	3,038	105	3,276	105	6,314	8,889
West Texas	5,328	184	5,391	174	10,719	14,847
East Texas	9,044	312	9,854	318	18,898	768
Rest of State	6,950	239	7,216	233	14,166	16,208
Total Texas	24,360	840	25,737	830	50,097	40,712
West Virginia	305	11	333	11	638	725
Wyoming:						
Salt Creek	648	22	727	23	1,375	1,537
Rest of State	437	15	457	15	894	1,019
Total Wyoming	1,085	37	1,184	38	2,269	2,556
Total United States	62,484	2,155	66,884	2,158	129,368	126,378

PRODUCTION OF CRUDE PETROLEUM BY FIELDS
(Thousands of barrels of 42 U. S. gallons)

FIELD:	Feb., 1932 Total	Feb., 1932 Dly. av.	Jan., 1932 Total	Jan., 1932 Dly. av.	Jan.-Feb., 1932	Jan.-Feb., 1931
Appalachian:						
Pennsylvania Grade	1,702	58	1,858	60	3,560	3,420
Other (including Kentucky)	617	21	650	21	1,267	1,455
Lima, Northeast Indiana, Michigan	491	19	558	18	1,049	708
Illinois-Southwest Indiana	484	16	500	16	984	920
Mid-Continent:						
North Louisiana and Arkansas	1,737	60	1,774	57	3,511	5,343
West Texas-S. E. New Mexico	6,374	220	6,528	211	12,902	17,023
Other (Okla., Kans., N. Texas, etc.)	31,208	1,076	33,823	1,091	65,031	52,121
Gulf Coast	3,820	132	4,155	134	7,975	10,561
Rocky Mountain	1,434	49	1,506	49	2,940	3,410
California	14,617	504	15,532	501	30,149	31,417
Total	62,484	2,155	66,884	2,158	129,368	126,378

INDICATED DOMESTIC DEMAND FOR CRUDE PETROLEUM EAST OF CALIFORNIA
(Thousands of barrels of 42 U. S. gallons)

Domestic petroleum by fields of origin:	Feb., 1932 Total	Feb., 1932 Dly. av.	Jan., 1932 Total	Jan., 1932 Dly. av.	Jan.-Feb., 1932	Jan.-Feb., 1931
Appalachian:						
Pennsylvania Grade	1,573	54	1,682	54	3,255	3,440
Other (including Kentucky)	556	19	824	27	1,380	1,452
Lima, northeast Indiana, Michigan	487	17	520	17	1,007	462
Illinois-southwest Indiana	291	10	315	10	606	967
Mid-Continent:						
North Louisiana and Arkansas	1,763	61	3,236	104	4,999	6,642
West Texas-S. E. New Mexico	6,328	218	7,381	238	13,709	19,809
Other (Okla., Kans., N. Texas, etc.)	32,250	1,112	34,042	1,098	66,292	56,182
Gulf Coast	4,055	140	3,753	121	7,808	10,975
Rocky Mountain	1,133	39	1,318	43	2,451	2,879
California	.....	...	.....	...	.....	.....
Total demand	48,436	1,670	53,071	1,712	101,507	102,808
Exports	977	34	940	30	1,917	2,128
Domestic demand	47,459	1,636	52,131	1,682	99,590	100,680
Foreign petroleum	4,013	138	2,493	80	6,506	7,892
Tt.l domestic demand east of Calif.	51,472	1,774	54,624	1,762	106,096	108,572

STOCKS OF CRUDE PETROLEUM
(Thousands of barrels of 42 U. S. gallons)

EAST OF CALIFORNIA:	Feb. 29, 1932	Jan. 31, 1932	Feb. 28, 1931
At refineries by location:			
East Coast: Domestic	8,296	8,073	10,201
Foreign	3,660	3,157	3,966
Appalachian	2,010	2,001	2,549
Indiana, Illinois, Kentucky, Michigan	3,935	3,940	2,495
Oklahoma, Kansas and Missouri	5,776	5,523	5,087
Texas: Inland	1,415	1,711	1,743
Gulf Coast: Domestic	7,012	6,438	6,900
Foreign	237	142	366
Arkansas and inland Louisiana	464	481	449
Louisiana Gulf Coast: Domestic	2,488	2,427	5,678
Foreign	846	749	771
Rocky Mountain	1,946	1,952	1,822
Total	38,085	36,594	42,027
At refineries by origin:			
Pennsylvania Grade	1,911	1,776	2,297
Other Appalachian (including Kentucky)	736	664	726
Lima, northeast Indiana, Michigan	239	215	165
Illinois-southwest Indiana	142	147	103
North Louisiana and Arkansas	1,479	1,497	3,591
West Texas and southeast New Mexico	3,700	3,567	4,866
Oklahoma, Kansas, North Texas, etc.	18,425	17,630	16,012
Gulf Coast: Grade A	1,342	1,314	3,438
Grade B	3,597	3,978	3,904
Rocky Mountain	1,771	1,758	1,817
California	.....	.....	.....
Foreign	4,743	4,048	5,103
Total	38,085	36,594	42,027
Pipe line and tank farm:			
Pennsylvania Grade	5,011	5,017	5,584
Other Appalachian (including Kentucky)	1,029	1,040	973
Lima, northeast Indiana, Michigan	1,623	1,644	1,620
Illinois-southwest Indiana	10,147	9,950	10,194
North Louisiana and Arkansas	15,744	15,739	19,562
West Texas and southeast New Mexico	34,087	34,282	42,926
Oklahoma, Kansas, North Texas, etc.	177,577	179,108	189,331
Gulf Coast	13,555	13,433	17,520
Rocky Mountain	23,719	23,394	25,600
Total	282,492	283,607	313,310
Total refinery, pipe line and tank farm	320,577	320,201	355,337
Producers' stocks	6,500	6,750	6,550
Total crude east of California	327,077	326,951	361,887
California: Light	42,311	42,431	43,428
Total crude	369,388	369,382	405,315

SHIPMENTS FROM CALIFORNIA TO EASTERN PORTS IN UNITED STATES*
(Thousands of barrels of 42 U. S. gallons)

	Feb., 1932	Jan., 1932	Feb., 1931	Jan.-Feb., 1932	Jan.-Feb., 1931
Gasoline	180	495	1,116	675	2,305
Natural gasoline	...	73	260	73	396
Kerosene	...	...	...	...	46
Gas oil	...	...	198	...	561
Diesel oil	...	...	...	...	...
Fuel oil	...	...	1	...	2
Lubricants	8	2	1	10	13
Asphalt	1	1	1	2	2
Miscellaneous	...	1	...	1	...
Total	189	572	1,577	761	3,325

*Compiled by E. T. Knudsen of the San Francisco office of the Bureau of Mines.

NUMBER OF WELLS COMPLETED IN THE UNITED STATES*

	Feb., 1932	Jan., 1932	Feb., 1931	Jan.-Feb., 1932	Jan.-Feb., 1931
Oil	575	643	450	1,218	937
Gas	99	124	218	223	420
Dry	239	197	397	436	838
Total	913	964	1,065	1,877	2,195

*From The Oil and Gas Journal and California office of the American Petroleum Institute.

RECORD OF WELLS FOR IMPORTANT FLUSH FIELDS, FEBRUARY, 1932*

	Completions Oil	Gas	Dry	Barrels Total initial prod.	Av. initial prod.	Drlg. Feb. 29
Texas	401	13	107	1,030,900	2,600	771
East Texas†	325	3	12	1,007,500	3,100	309
Gulf Coast	18	0	28	12,400	700	65
West Texas	6	0	2	900	200	85
California	11	0	17	5,900	500	125
Kettleman Hills	1	0	0	1,800	1,800	12
Long Beach	1	0	0	300	300	11
Playa Del Rey	2	0	1	700	400	1
Oklahoma	30	16	17	76,700	2,600	243
Oklahoma County	10	0	1	65,800	7,000	46
Pottawatomie-Seminole Counties	7	0	1	10,000	1,400	11
New Mexico	1	1	1	14,800	14,800	46
Lea County (Hobbs)	1	0	0	14,800	14,800	5
Other states	132	69	97	30,400	200	884
Total United States	575	99	239	1,158,700	2,000	2,069

*From The Oil and Gas Journal and California office of the American Petroleum Institute. †Initial production for the East Texas Field calculated from field reports.

IMPORTS AND EXPORTS OF CRUDE PETROLEUM AND MAJOR REFINED PRODUCTS*

(Thousands of barrels of 42 U. S. gallons)

	Feb., 1932	Jan., 1932	Feb., 1931	Jan.-Feb., 1932	Jan.-Feb., 1931
CRUDE PETROLEUM:					
Imports	4,708	2,047	4,789	6,755	9,142
From Mexico	647	572	522	1,219	767
From Venezuela	2,326	1,268	2,356	3,594	4,986
From Colombia	1,670	85	1,711	1,755	2,991
From other countries	65	122	170	187	398
Exports:					
Domestic crude oil	1,897	1,633	1,710	3,530	3,629
To Canada	1,168	1,127	1,389	2,295	2,744
To other countries	729	503	321	1,232	885
Shipments	...	3	...	3	...
REFINED PRODUCTS:					
Gasoline:					
Imports	1,195	1,224	948	2,419	2,064
Exports†	2,849	3,422	3,606	6,271	8,509
To United Kingdom	718	1,100	1,243	1,818	3,027
To France	319	697	515	1,016	1,292
To other countries	1,625	1,382	1,663	3,007	3,659
Shipments	8	123	3	131	173
Kerosene:					
Exports	739	1,214	977	1,953	2,270
To China	14	149	116	163	318
To United Kingdom	246	334	312	580	545
To other countries	474	701	546	1,175	1,286
Shipments	5	30	3	35	21
Gas oil and fuel oil:					
Imports	2,301	2,302	1,956	4,603	4,427
Exports	1,508	1,545	2,555	3,053	5,535
To Japan	383	346	227	729	835
To Chile	...	143	311	143	716
To other countries	891	1,026	1,666	1,917	3,388
Shipments	234	30	351	264	596
Lubricants:					
Exports	599	616	557	1,215	1,244
To United Kingdom	222	122	124	344	186
To France	30	115	53	145	265
To other countries	342	371	374	713	782
Shipments	5	8	6	13	11
Wax (thousands of pounds):					
Imports	8,294	4,586	3,035	12,880	5,680
Exports	17,507	22,969	23,503	40,476	45,566
To United Kingdom	6,603	6,781	5,048	13,384	10,846
To Italy	1,942	2,202	4,833	4,144	7,460
To other countries	8,959	13,983	13,621	22,942	27,256
Shipments	3	3	1	6	4

*From the Bureau of Foreign and Domestic Commerce. †Includes benzol—3,000 bbls. in February.

RUNS TO STILLS AND OUTPUT OF REFINERIES, FEBRUARY, 1932

(Thousands of barrels of 42 U. S. gallons)

Input—	Crude oil—Domestic	Crude oil—Foreign	Total	Unfinished oils rerun	Natural gasoline	Total input
East Coast	9,807	3,114	12,921	572	70	13,563
Appalachian	2,720	....	2,720	204	32	2,956
Ind., Ill., Ky., etc.	7,986	....	7,986	297	188	8,471
Okla., Kans., Mo.	6,718	....	6,718	297	325	7,340
Texas Inland	3,884	....	3,884	147	251	4,282
Texas Gulf	10,744	25	10,769	1,183	188	12,140
Ark. and La. Inland	1,278	....	1,278	260	70	1,608
Louisiana Gulf	3,118	40	3,158	51	52	3,261
Rocky Mountain	1,113	....	1,113	171	70	1,354
California	13,267	....	13,267	1,154	*641	15,062
Total	60,635	3,179	63,814	4,336	1,887	70,037

Output—	Gasoline	Kerosene	Gas oil and distillate fuels	Residual fuel oils	Lubricants	Wax (thousands of pounds)
East Coast	5,781	550	872	4,159	595	22,400
Appalachian	1,406	256	91	292	325	7,280
Ind., Ill., Ky., etc.	4,726	259	768	1,265	172	5,320
Okla., Kans., Mo.	3,820	482	562	1,322	214	2,520
Texas Inland	2,085	218	136	1,243	21	280
Texas Gulf	5,519	735	1,372	2,793	408	3,080
Ark. and La. Inland	598	55	110	433	17	....
Louisiana Gulf	1,535	283	223	766	27	5,880
Rocky Mountain	673	27	68	178	15	1,680
California	5,122	335	1,407	5,527	153	....
Total	31,265	3,200	5,609	17,978	1,947	48,440

Output (Cont'd.)—	Coke (tons)	Asphalt (tons)	Road oil	Still gas	Miscellaneous	Unfinished products	Shortage
East Coast	15,300	45,100	6	608	19	385	182
Appalachian	2,700	7,100	2	178	17	210	100
Ind., Ill., Ky., etc.	56,300	26,200	10	571	74	95	81
Okla., Kans., Mo.	22,900	.....	29	285	24	212	264
Texas Inland	5,500	.....	5	77	25	235	208
Texas Gulf	21,600	11,300	1	705	3	216	205
Ark. and La. Inland	200	6,400	....	37	12	258	52
Louisiana Gulf	5,700	5,200	....	82	4	204	58
Rocky Mountain	8,600	200	14	62	2	275	†11
California	2,600	28,500	21	424	93	1,416	394
Total	141,400	130,000	88	3,029	273	3,506	1,533

*Includes 100,000 bbls. run through pipe lines. †Overage.

PRODUCTION OF MOTOR FUEL

(Thousands of barrels of 42 U. S. gallons)

	February, 1932—Total	February, 1932—Dy. av.	January, 1932—Total	January, 1932—Dy. av.	Jan.-Feb., 1932	Jan.-Feb., 1931
Straightrun gasoline	15,780	544	16,629	536	32,409	31,103
Cracked gasoline	13,598	469	13,981	451	27,579	25,547
Natural gasoline:						
Blended at refineries	1,787	62	2,279	74	4,066	6,187
Blended at plants*	5	..	3	..	8	26
Run through pipe lines†	100	3	118	4	218	142
Jobbers, exports, etc.	375	13	400	13	775	675
Benzol produced‡	119	4	125	4	244	356
Total motor fuel	31,764	1,095	33,535	1,082	65,299	64,036

*East of California. †To refineries in California. ‡Estimated.

SHIPMENTS OF MOTOR FUEL BY PIPE LINES

(Thousands of barrels of 42 U. S. gallons)

	Feb., 1932	Jan., 1932	Feb., 1931	Jan.-Feb., 1932	Jan.-Feb., 1931
Motor fuel turned into lines	1,978	2,123	282	4,101	461
Motor fuel delivered from lines	1,987	1,885	224	3,872	386
Shortage	7	7	*2	14	*2
Stocks in lines and working tanks end of month	1,177	1,193	630	1,177	630

*Overage.

GASOLINE PRODUCTION BY THE VARIOUS METHODS—FEBRUARY, 1932

(Thousands of barrels of 42 U. S. gallons)

	Straightrun—Total	Straightrun—Per cent (*)	Straightrun—Per cent (†)	Cracked—Total	Cracked—Per cent (*)	Cracked—Per cent (†)	Natural gasoline—Total	Natural gasoline—Per cent†	Gasoline—Total	Gasoline—Per cent*
East Coast	2,792	21.6	48.3	2,919	22.6	50.5	70	1.2	5,781	44.2
Appalachian	691	25.4	49.1	683	25.1	48.6	32	2.3	1,406	50.5
Ind., Ill., etc.	1,961	24.5	41.5	2,577	32.3	54.5	188	4.0	4,726	56.8
Okla., Kans., Mo.	2,028	30.2	53.1	1,467	21.8	38.4	325	8.5	3,820	52.0
Texas Inland	1,176	30.3	56.4	658	16.9	31.6	251	12.0	2,085	47.2
Texas Gulf	2,740	25.4	49.6	2,591	24.1	47.0	188	3.4	5,519	49.5
Ark. and La. Inland	279	21.8	46.7	249	19.5	41.6	70	11.7	598	41.3
Louisiana Gulf	770	24.4	50.2	713	22.6	46.4	52	3.4	1,535	47.0
Rocky Mountain	328	29.5	48.7	275	24.7	40.9	70	10.4	673	54.2
California	3,015	22.7	58.9	1,466	11.1	28.6	641	12.5	5,122	33.8
Total	15,780	24.7	50.5	13,598	21.3	43.5	1,887	6.0	31,265	46.0

*Per cent of crude run. †Per cent of total gasoline output.

PRODUCTION AND DISTRIBUTION OF NATURAL GASOLINE

(Thousands of barrels of 42 U. S. gallons)

	Feb., 1932—Total	Feb., 1932—Daily av.	Jan., 1932—Total	Jan., 1932—Daily av.	Jan.-Feb., 1932	Jan.-Feb., 1931
Production	3,148	109	3,342	108	6,490	7,771
Decrease in all stocks	....	....	....	....	....	....
Total	3,148	109	3,342	108	6,490	7,771
Blended at refineries	1,787	62	2,279	74	4,066	6,187
Blended at plants east of Calif.	5	....	3	....	8	26
Run through pipe lines in Calif.	100	3	118	4	218	142
Jobbers, exports, etc.	375	13	400	13	775	675
Increase in all stocks	574	20	116	4	690	188
Balance	307	11	426	13	733	553
Total	3,148	109	3,342	108	6,490	7,771

SUPPLY AND DEMAND OF ALL OILS

(Including wax, coke, and asphalt in thousands of barrels of 42 U. S. gallons.)

NEW SUPPLY:	February, 1932	January, 1932	February, 1931	Jan.-Feb., 1932	Jan.-Feb., 1931
Domestic production:					
Crude petroleum	62,484	66,884	60,645	129,368	126,378
Daily average	2,155	2,158	2,166	2,156	2,142
Natural gasoline	3,148	3,342	3,631	6,490	7,771
Benzol	119	125	172	244	356
Total production	65,751	70,351	64,448	136,102	134,505
Daily average	2,267	2,269	2,302	2,268	2,280
Imports:					
Crude petroleum	4,708	2,047	4,789	6,755	9,142
Refined products	3,536	3,550	2,917	7,086	6,518
Total new supply, all oils	73,995	75,948	72,154	149,943	150,165
Daily average	2,552	2,450	2,577	2,499	2,545
Increase in stocks, all oils	1,098	*504	*3,752	594	*3,282
DEMAND:					
Total demand	72,897	76,452	75,906	149,349	153,447
Daily average	2,514	2,466	2,711	2,489	2,686
Exports:					
Crude petroleum	1,897	1,633	1,710	3,530	3,629
Refined products	5,892	6,989	7,992	12,881	18,083
Domestic demand	65,108	67,830	66,204	132,938	136,735
Daily average	2,245	2,188	2,364	2,216	2,318
Excess of daily average domestic production over domestic demand	22	81	†62	52	†38
STOCKS (end of month):					
Crude petroleum:					
East of California	327,077	326,951	361,887	327,077	361,887
California‡	42,311	42,431	43,428	42,311	43,428
Total crude	369,388	369,382	405,315	369,388	405,315
Natural gasoline	3,508	2,934	3,288	3,508	3,288
Refined products‡	260,232	259,714	249,777	260,232	249,777
GRAND TOTAL STOCKS, ALL OILS	633,128	632,030	658,380	633,128	658,380
Days' supply	252	256	243	254	243
Bunker oil (included above in domestic demand)	3,136	3,031	3,622	6,167	7,166

*Decrease. †Deficiency. ‡California heavy crude and residual fuel included under refined products.

STOCKS HELD BY REFINING COMPANIES, FEBRUARY 29, 1932

(Thousands of barrels of 42 U. S. gallons)

	Gasoline—At refineries	Gasoline—At bulk terminals	Gasoline—Total	Kerosene	Gas oil and distillate fuels	Residual fuel oils
East Coast	6,802	9,345	16,147	956	2,554	4,510
Appalachian	1,936	288	2,224	201	514	625
Ind., Ill., Ky., etc.	5,507	2,559	8,066	565	1,583	2,930
Okla., Kans., Mo.	4,170	1,045	5,215	451	1,591	2,097
Texas Inland	2,451	73	2,524	126	594	3,078
Texas Gulf	7,243	82	7,325	706	1,696	5,903
Ark. and La. Inland	181	165	346	21	101	532
Louisiana Gulf	1,562	302	1,864	149	482	2,899
Rocky Mountain	2,108	....	2,108	335	299	384
California	14,963	(*)	14,963	1,461	4,210	†92,809
Total	46,923	13,859	60,782	4,971	13,623	115,817

	Wax (thousands of pounds)—Lubricants	Wax (thousands of pounds)—Crude scale	Wax (thousands of pounds)—Refined	Wax (thousands of pounds)—Total	Coke (tons)
East Coast	3,299	37,416	24,534	61,950	15,100
Appalachian	1,116	16,845	3,144	19,989	7,700
Ind., Ill., Ky., etc.	984	21,232	1,350	22,582	176,100
Okla., Kans., Mo.	810	3,009	1,467	4,476	160,500
Texas Inland	74	.....	205	205	136,100
Texas Gulf	2,123	369	11,753	12,122	587,300
Ark. and La. Inland	40	.....	.....	.....	.....
Louisiana Gulf	102	31,121	1,868	32,989	116,400
Rocky Mountain	243	32,952	1,423	34,375	138,600
California	981	.....	.....	.....	102,500
Total	9,777	142,944	45,744	188,688	1,440,300

	Asphalt (tons)	Road oil	Miscellaneous products	Unfinished oils	Natural gasoline
East Coast	103,700	11	74	7,246	147
Appalachian	23,700	62	54	1,543	8
Ind., Ill., Ky., etc.	80,800	16	251	6,244	58
Okla., Kans., Mo.	2,800	139	40	3,330	41
Texas Inland	....	6	9	1,239	5
Texas Gulf	9,000	12	9	9,784	317
Ark. and La. Inland	26,700	....	6	634	11
Louisiana Gulf	26,300	....	8	2,198	6
Rocky Mountain	2,200	129	51	2,002	3
California	38,200	134	247	18,908	2,037
Total	313,400	509	749	43,078	2,633

*Included with "at refineries." †Includes heavy crude. ‡Includes 4,785,000 bbls. tops.

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40 ACRES lease Sale, Brewster County, Section 157, Block G-4, $200. Amandus Beyerman, 9 Van Doren St., Corona, L. I.

800 ACRES Leases "GREAT TIOGA NATURAL GAS REGION." Sell All or Part. Clear Titles. Jack Payne, Box 42, Wellsboro, Pa.

10 TO 320 ACRES cheap near Mid-Kansas Coke County well and Eastland Oil Co.'s new operation Taylor County. Real buys. E. Croft, Proctor, Texas.

BUYERS — BROKERS
East Texas Oil Leases or half Royalty, near drilling Joiner and others. $2 acre. E. M. Adams, Clarksville, Texas.

AXELSON PRESIDENT AND MRS. COVERLY MARRIED

Jule Calmont Axelson, president of the Axelson Manufacturing Co., Los Angeles, Calif., and Mrs. Gladys Rylands Coverly were married April 1 in the Mission Inn,

J. C. Axelson

Riverside, Calif. The bride, a daughter of Mr. and Mrs. Thomas Rylands of New York and Los Angeles, is a niece of Sir Peter Rylands, member of the British parliament, and of the late Sir John Pritchard of London. Mr. Axelson is a member of the Wilshire Country Club, Jonathan Club and Newport Yacht Club. Mr. and Mrs. Axelson will pass the summer in Balboa, returning to their Los Angeles residence in the fall.

NEW SURVEY COMMITTEE APPOINTED BY WILBUR

WASHINGTON, D. C., Apr. 18.—Secretary Wilbur, as chairman of the Federal Oil Conservation Board, has announced that John W. Frey, chief, petroleum section, mineral division, Bureau of Foreign and Domestic Commerce, will serve as chairman of the board's volunteer committee on petroleum economics and will proceed immediately with the preparation of a special report or survey of national petroleum requirements for the period April 1 to December 31, 1932. Other members of the volunteer comittee are: Martin Van Couvering, petroleum engineer, Los Angeles; Howard Bennette, Western Petroleum Refiners Association, Tulsa; Clarel B. Mapes, Mid-Continent Oil and Gas Association, Tulsa, and Sidney A. Swensrud, Standard Oil Co. of Ohio, Cleveland.

This committee's report, which will treat of probable crude oil and motor fuel demands of the country, will in a measure be a companion report to a similar survey to be made by the American Petroleum Institute. The two reports will be submitted upon the occasion of the midyear meeting of the American Petroleum Institute June 1, 2 and 3 at Tulsa.

The volunteer committee on petroleum economics of the Federal Oil Conservation Board has, since 1930, compiled periodic reports dealing with anticipated consumption of refined products, probable crude production necessary to meet efficiently the national requirements, and allocation of production requirements as between the larger producing areas of the country. The members of this committee, recognized as outstanding technologists and oil authorities, have served as volunteer attaches of the Federal Oil Conservation Board, and the reports or surveys have been made at the request of the American Petroleum Institute as representative of the oil industry generally. These surveys have to a certain extent been recognized and accepted as a blue print or chart which might be advantageously followed by the country's producers and refiners in an effort to balance production and consumption factors.

Doctor Frey, the new chairman of this volunteer committee on petroleum economics, is one of the Government's recognized authorities on petroleum economics. He has been chief of the petroleum section, mineral division, of the Bureau of Foreign and Domestic Commerce for the past four years.

AERONAUTICAL MEETING IS HELD BY ENGINEERS

The Mid-Continent section of the American Society of Mechanical Engineers held a meeting for the discussion of aeronautical subjects at the Ritz Theater, Tulsa, April 14. The session was opened by H. F. Brindel, state vice chairman of the society, who announced the selection of Dr. C. K. Francis, technical editor of The Oil and Gas Journal as chairman.

The first paper, "The Theory of the Autogiro," by A. E. Larsen, chief engineer of the Autogiro Co. of America, was read by John M. McGregor, the secretary of the Mid-Continent section. In this paper it was explained that 80 per cent of the entire weight of the machine is carried by a rotating rather than a fixed engine system. An airship of this type will neither stall nor spin and has low speed characteristics which are of value when taking off and landing. This paper was followed by two films, the first explained the autogiro in motion and the second was a series of pictures showing the movements of wind. Some of these pictures were taken at the rate of 40,000 a minute, which were prepared in the research department of Tokio University, Japan.

Doctor Francis presented a paper on "Airplane Motor Fuel." This paper calls attention to the study which has resulted in the present specifications for aviation gasoline, a high quality fuel which would be difficult to be duplicated from another source than petroleum.

Harry Nelson, of the Empire Oil & Refining Co., described how aerial surveys are made for geological purposes and especially their practical value when selecting a route for a pipe line and in obtaining rights of way. This paper was illustrated by a film from the Fairchild Aerial Survey Co., giving the details of the operation of the camera from the airplane and then the laboratory work for the development of the pictures and the preparation of maps.

"The Fundamentals of Aerodynamics" were clearly demonstrated and explained by Faun W. Freeborn, Jr., by means of blackboard drawings. This paper was of particular interest in connection with the pictures showing the movements of wind about the parts of an airplane.

SHIPMENTS SHOW DROP IN CURACAO AND ARUBA

NEW YORK, Apr. 18.—Imports and exports of petroleum at Curacao and Aruba showed a decline of almost 12 per cent during 1931, according to the Department of Commerce. Exports from these two Dutch West Indies refining centers last year were 88,649,387 bbls., against 100,547,224 bbls. in 1930, with imports totaling 97,000,333 bbls., against 110,092,772 bbls. in 1930.

Exports, by products, for the past two years, were as follows:

	Barrels	
	1931	1930
Crude oil	6,754,180	10,588,134
Gasoline	17,038,994	17,650,363
Kerosene	489,519	166,088
Lub oil	800,409	1,041,277
Diesel oil	743,049	958,328
Gas and fuel oil	62,834,236	70,143,034

The reduced movement at Curacao and Aruba reflected the curtailed producing operations in Venezuela.

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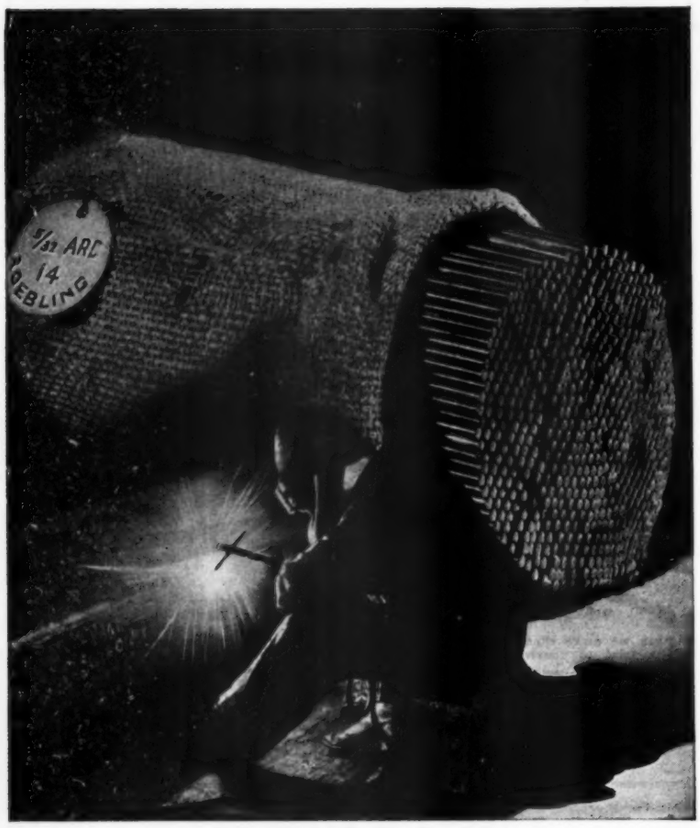

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Note, to the right, the reasons why Roebling Welding Wire greatly facilitates the production of tough, strong welds. Then write to our distributors for samples of this wire and convince yourself of its merit. It is made in both gas and electric types.

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